AVIATION WEEK

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helicopters rely on BG spark plugs

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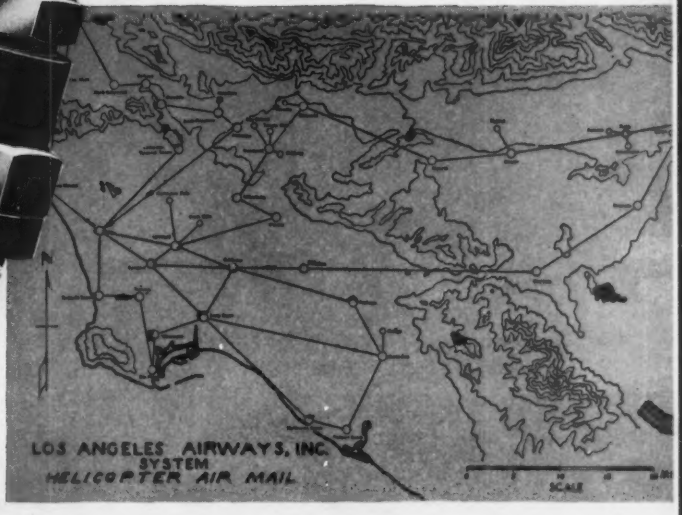

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Boeing B-50
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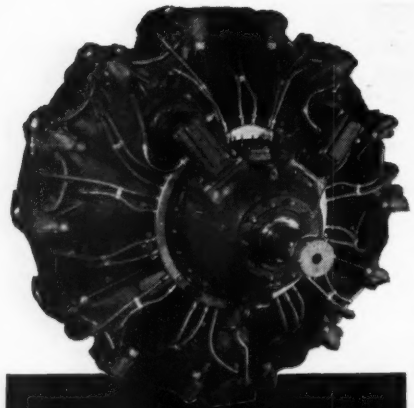

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Vol. 51, No. 10

AVIATION WEEK

September 5, 1949

The Aviation Week..... 7
Aviation Calendar 8
News Digest 9
Who's Where 11
Industry Observer..... 11
Headline News..... 12
Financial 17
New Products..... 18
Aeronautical Engineering... 20
Production 27
Sales & Service..... 31
Air Transport..... 33
Strictly Personal 44
What's New..... 44
Editorial 46

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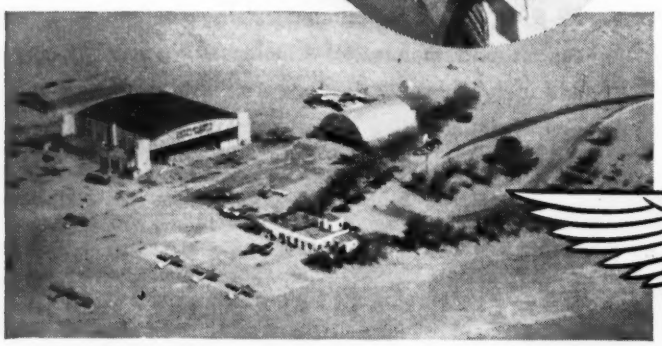

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AVIATION PRODUCTS

The New Defense Department — A Staff Report

The recently-signed Unification Act leaves the future role of the Secretary for Air a question mark. It will be decided by the man who fills the post. On the one hand, the act gives the Secretary of Defense a firm hold over the three services, tightening his "direction, authority and control."

On the other hand, the Secretary for Air—as well as the two other service secretaries and the members of the Joint Chiefs of Staff—are explicitly authorized to by-pass the Secretary of Defense and lay their cases before members of Congress as they see fit.

The act leaves to the Secretary for Air whether to push the Air Force's case in Congress, or whether to accede to the Secretary of Defense when he is at odds with USAF's program.

This is as it has been: Last year, Secretary for Air Stuart Symington challenged the late Secretary of Defense James Forrestal on the 70-group USAF issue, but this year he acquiesced in the stand of President Truman and Secretary of Defense Johnson for a 48-group USAF. Symington's refusal to endorse even the 58-group Air Force, approved by the House, pulled the rug from under senators who were eager to support it—but felt they could not in the face of Symington's position that the ten added groups were not needed for the national defense. Senators shrank from telling their tax-overburdened constituents that they voted to pour $800 million out of the federal treasury for an unnecessary defense program.

The unification measure, which puts Secretary Louis Johnson on the spot to fulfill his promise that it would pave the way for an annual saving of from $1 billion to $1.5 billion in the military budget through elimination of overlapping and duplicative activities among the services, was shoved through the House only after skeptical representatives watered it down with five restrictions on Johnson's power. The Senate unanimously approved the measure. In addition to authorization for the service secretaries to appeal directly to Congress, the House restrictions were:

• **The provision barring the secretary** from making changes in the combatant functions assigned to the services is given added emphasis over the 1947 Unification Act by the direction that assigned missions "shall not be transferred, reassigned, abolished or consolidated."

• **Prohibition of inter-service transfer** of military personnel. Limited leeway is given to detail military personnel to other services.

• **The secretary is required to notify** the House and Senate Armed Services Committees on any major changes in organization and activities he intends making, before action is taken. In addition, he is required to report biennially to Congress on savings resulting from the elimination of duplicating and over-lapping activities.

• **The role of the Joint Chiefs of Staff** as advisor to the President and National Security Council on strategic matters is spelled out in detail.

But despite the restrictions, seven House members—three of them ardent Naval boosters—denounced the legislation as a vicious concentration of power in the Secretary of Defense and voted against it. The overwhelming vote for it was 356. The Senate unanimously voted approval of the unification measure.

Rep. Sterling Cole (R., N. Y.), high-ranking member of the House Armed Services Committee and an opponent of the legislation, discounted it as "unification" and termed it "a merger of the three services into a corporate monster." Under it, he predicted, "there will be a few symbolic cuts, mostly on paper at the Army and the Air Force, but the real whacks will come from the Marine Corps and Naval Aviation.

Following are the key provisions:

• **Department of Defense.** The "National Military Establishment" is converted into an executive department, a "Department of Defense," and the three service departments are made military departments within the Department of Defense.

• **Secretary of Defense** is given "direction, authority and control" over the department, instead of the "general direction, etc." he held under the 1947 Unification Act. To strengthen his management, four new posts are created: a deputy secretary of defense, in lieu of an under secretary (whose rank over the three service secretaries was questionable), and three assistant secretaries of defense. Under Secretary Stephen Early is now deputy secretary. The three new assistant secretaries are Marx Leva, formerly general counsel to Johnson; Wilfred J. McNeil, formerly Johnson's assistant on budget matters; and Paul Griffith, former American Legion national commander.

• **Joint Chiefs of Staff.** A "chairman" of the Joint Chiefs of Staff, a career military man appointed by the President and confirmed by the Senate, is established. Chief of Staff Gen. Omar Bradley, has been nominated to the post. The chairman will take precedence over the three chiefs of staff, but he will have no vote and no authority to resolve their differences. A two-year term, one with reappointment permissible, is provided. As put by Chairman Carl Vinson (D., Ga.) of the House Armed Services Committee, the chairman's function will be "expediting the business of the Joint Chiefs of Staff and presiding at their meetings. We do not want him to be anything more than that." Johnson has sought a chairman who would, in effect, be a super chief of staff, reporting to him.

• **National Security Council.** The vice president is made a member of the council, the top-level policy group on overall foreign and domestic, military and civilian affairs. The three service secretaries are removed from membership. Other members of the council, as in the past, are: the President, the Secretary of State, and the Chairman of the National Security Resources Board. The President has authority, with approval of the Senate, to appoint the secretaries of departments, the Chairman of the Munitions Board, and the Chairman of the Research and Development Board.

• **War Council** is renamed the Armed Forces Policy Council. The Deputy Secretary of Defense and the Chairman of the Joint Chiefs of Staff are added to the membership, which includes the Secretary of Defense, the three service secretaries and the three chiefs of staff.

• **Munitions Board** and the Research and Development Board are clearly placed under the "authority and direction" of the Secretary of Defense.

• **A new budgetary organization** is established. A Comptroller of the Department of Defense and a comptroller and deputy comptroller in each of the three departments are created to work out uniform "performance" budgets of readily identifiable functional programs and activities, with segregation of operating and capital programs.

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AVIATION CALENDAR

Sept. 6-8—Annual spark plug and ignition conference, sponsored by Champion Spark Plug Co., Hotel Secor, Toledo, Ohio.

Sept. 7-11—10th Society of British Aircraft Constructors flying display and exhibition, Farnborough Airfield, Hampshire, England.

Sept. 9-12—Clinic on maintenance of industrial instruments, Instrument Society of America, Statler Hotel, St. Louis.

Sept. 10-11—Pennsylvania wing, Civil Air Patrol, "mobilization" at Conneaut Lake Park Hotel. Port Meadville Flying Field will be used by those coming by air.

Sept. 11—Dedication, Quincy, Ill., municipal airport.

Sept. 12-16—13th anniversary meeting, International Air Transport Assn. The Hague, Holland.

Sept. 12-16—Fourth national instrument conference and exhibit, sponsored by The Instrument Society of America, Kiel Auditorium, St. Louis.

Sept. 14-15—82nd eastern division meeting of NASC, New York City.

Sept. 17-18—Aircraft Owners and Pilots Assn. annual summer round-up flight and tenth anniversary celebration, Rehoboth Beach, Del.

Sept. 18-20—International Northwest Aviation Council convention, Spokane, Wash.

Sept. 22-23—ARC-CAA-CAB transport meeting on CAR 4b policies and interpretations, Hotel Statler, Washington, D. C.

Sept. 26-28—National Electronics Conference, Edgewater Beach Hotel, Chicago.

Sept. 27-30—1949 fall meeting, American Society of Mechanical Engineers, Hotel Lawrence, Erie, Pa.

Oct. 3-8—Twentieth anniversary meeting, Ninety-Nines, Waldorf-Astoria, New York.

Oct. 5-8—SAE national aeronautic meeting and aircraft engineering display, Biltmore Hotel, Los Angeles.

Oct. 7-8—American Air Mail Society, exhibition and convention, Edgewater Beach Hotel, Chicago.

Oct. 12-15—Air Reserve Assn. convention Long Beach, Calif.

Oct. 13-15—1949 conference on airport management and operations, sponsored by University of Oklahoma and Southern Flight magazine, Norman, Okla.

Oct. 17—36th NASC steering committee meeting, Dayton, O.

Oct. 18-19—6th NAS council meeting, Wright-Patterson AFB, Dayton, O.

Oct. 30—Third annual San Francisco Air Fair, sponsored by Junior Chamber of Commerce, San Francisco Airport.

Jan. 13-15, 1950—All American Air Maneuvers, Miami.

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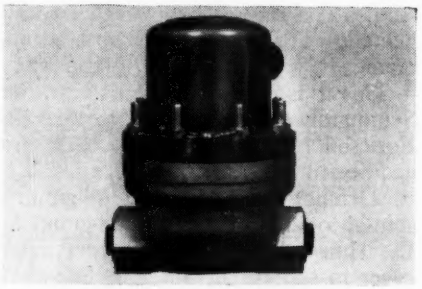

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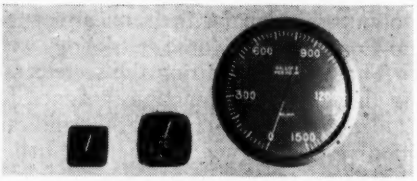

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NEWS DIGEST

DOMESTIC

TWA has filed with CAB an application to operate Skycoach service between San Francisco and Kansas City at proposed fare of $69.45, to supplement airline's similar services between Los Angeles and Kansas City, Chicago and New York, which have been running at 75 percent load factor.

Pilot exchange program between Air Force and Navy will begin this month. Arrangement will accommodate 25 flying officers from each branch of the service for one-year tour of duty. Jet pilots will be checked out in aircraft of the sister service, AF search and rescue pilots will operate Navy amphibs and other AF pilots will participate in carrier operations.

Shipments of propellers and parts during first half of 1949 totalled $31 million, of which $24.3 million was for military. Comparable figures for 1948 where $25 million total, with $18.4 for military. Prop plant employment reached peak of 8783 in June, highest in past 1½ years.

Fairchild Engine & Airplane Corp. has closed its New York office.

Starr Nelson, 84, oldest private flyer in U. S., died during ceremony in which he was receiving fourth-time award of "Oldest Flying Farmer," at Estes Park, Colo., Flying Farmers Convention.

Personal aircraft shipments for July, as reported by ten companies to the Aircraft Industries Assn., totaled 295 planes valued at $1,154,000. Four-place planes numbered 226; two-place, 60; and one-place, nine. In June, eleven companies shipped 424 planes valued at $1,628,000.

Western Air Lines asked Civil Aeronautics Board consent to start DC-4 Skycoach service from San Diego to Seattle-Tacoma on Oct. 15. Fare would be 33⅓ percent below regular fare and planes would leave between 7 pm and 1 am. WAL also asked permission to operate round-the-clock Skycoach service between Los Angeles and San Francisco.

FINANCIAL

Lockheed Aircraft Corp. report to shareholders shows net profit of $2,237,416 for first half 1949, equivalent to $2.08 per share. Total volume for Lockheed and its subsidiary companies equaled $55,785,060 for the half year, $10,195,990 less than for first half of 1948, partly attributed to production shift to improved Navy P2V and adjustments to F-80 line to accommodate T-33 jet trainer and F-94 all-weather fighter. Backlog for all craft for half year was $202,268,000, compared to $195,901,000 for the period last year.

Consolidated Vultee Aircraft Corp. reports net profit for six months ending May 31 of $1,585,327 on sales of $104,352,596. For the similar period of 1948, loss was $7,534,419.

INTERNATIONAL

Boost in safety records of airline members of International Air Transport Assn. is disclosed in report showing fatality rate in scheduled operations was 1 per 30,487,279 passenger-miles for 1948 as against 21,184,108 passenger-miles for 1947. There were 20 fatal accidents in 1948, 32 in 1947.

Viscount turboprop liners have been ordered by British Overseas Airways Corp. on behalf of its associate British West Indian Airways, and by British European Airways for its Continental and United Kingdom trunk services. BAOC will probably take about 12, BEA around 20.

Sweden's export drive is highlighted by flight of SAAB's prototype Scandia airliner to U. S. Craft is slated to tour country during month of September with crew of technical and economic experts to investigate sales possibilities.

Interline transactions in International Air Transport Assn.'s London clearing house has shown a total turnover of $75,204,000 for first half of 1949, a gain of $30,180,000 over similar period in 1948. June transactions totalled $13,681,000, exceeding that month's 1948 figure by $2,069,000. Clearances with domestic U. S. airline clearing house, Chicago, reached high of $393,000 during June.

Britain's largest turboprop transport, the Handley Page Hermes V, fourth of such British types to take to the air, has made its initial flight and reached 345 mph. without being at full throttle. No production is contemplated until airline orders are obtained.

Bombay's Santa Cruz Airport east-west runway will be lengthened from 5200 to 8000 ft. and equipped with high-intensity landing lights. This work, with radio landing aids, will eliminate need of removing the 672-ft. hill near the site, where KLM Connie recently crashed.

Importation from U. S. of one Ryan Navion, 15 Aeroncas, two Douglas C-47BS, six Piper PA-16S, and two Curtiss C-46 Commandos, has been approved by Brazil's civil aeronautics director.

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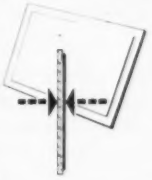

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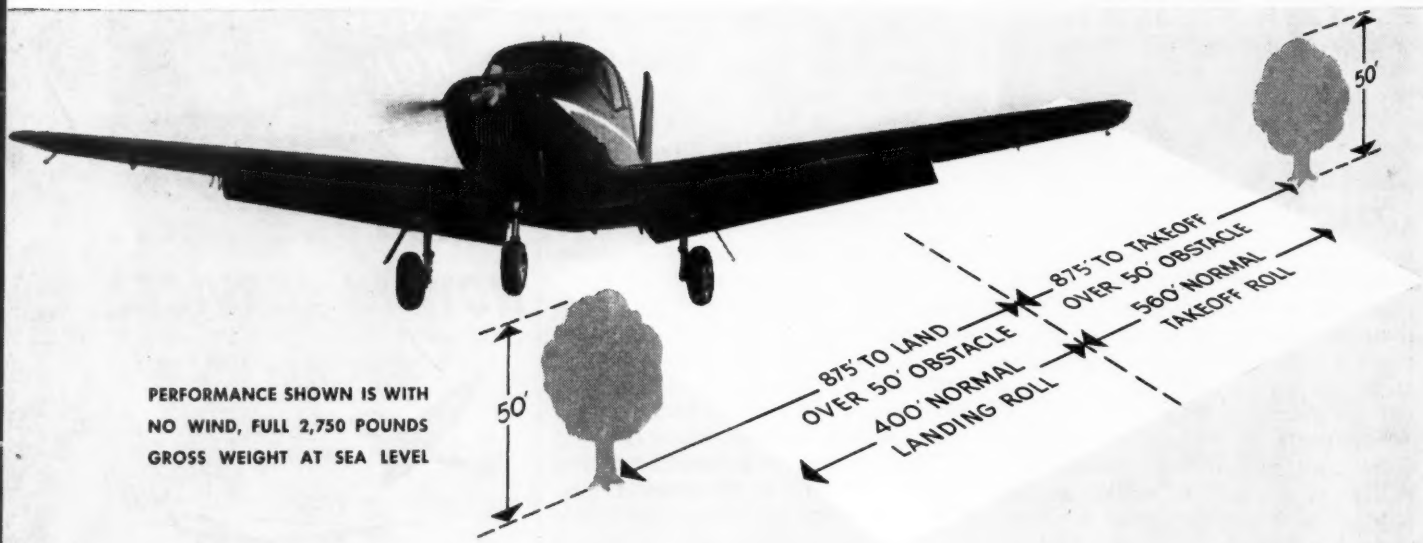
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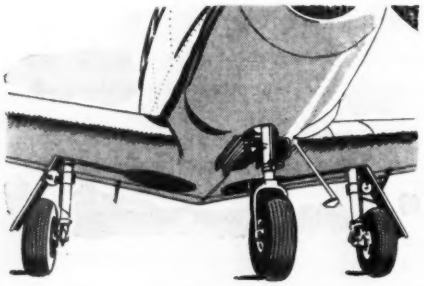
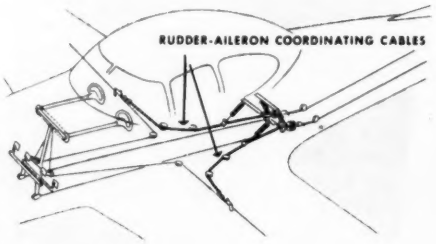
875' TO TAKEOFF OVER 50' OBSTACLE
560' NORMAL TAKEOFF ROLL
875' TO LAND OVER 50' OBSTACLE
400' NORMAL LANDING ROLL
50'
PERFORMANCE SHOWN IS WITH NO WIND, FULL 2,750 POUNDS GROSS WEIGHT AT SEA LEVEL

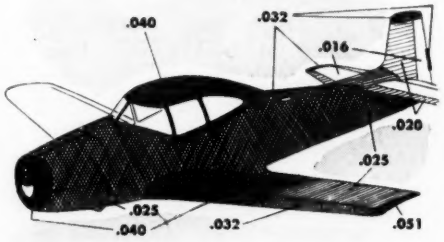
DON'T WORRY if that smooth, concrete runway is miles from where you want to go. A *Ryan Navion* will take you into short, rough strips... and out again, with ease and safety. Think of it! *Navion* lands at only 54 m.p.h. with full gross load. Its high-lift, full-deflection flaps lower 43° to make possible slow, steep approaches. Only 875 feet are needed to clear a 50-ft. obstacle—both on landing and take-off. *Navion's* husky 205 h.p. engine will give you 900-ft. of altitude in your *first minute* of flight! Performance like this is mighty important to the man who wants a rugged, versatile plane with plenty of utility that'll get him there and put him down right where he's needed. Yes, *Navion's* short-field performance is a big reason why it's the growing favorite among businessmen pilots.



WIDE WHEEL TREAD and high ground clearance...big, steerable balanced nosewheel and oversize tires enable you to set the *Navion* down smooth as velvet on rough, soft fields, even in cross winds. Big, equalized hydraulic brakes ease ground-handling. Deep-stroke hydraulic shocks are real heavyweights.



SAFE, AND EASY-TO-FLY, the 155 m.p.h. *Navion* has amazing stability, is gentle and well-behaved..."forgives" pilot error short of foolhardiness. It features "two control after take-off"...yet you have rudder when you want it. Stall-resistant wing gives aileron control *below* stalling speed for safety.



BIG AND RUGGED, the thick-skinned, all-metal *Navion* represents highest structural integrity in aircraft design. Low maintenance cost and permanent beauty are assured. Send now for colorful, FREE brochure which gives complete details on the big, fast, rugged, easy-to-fly-safely *Ryan Navion. No obligation.*

NO OTHER PLANE COMBINES SO MANY FEATURES SO WELL

Ryan Navion

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STANDARD FEATURES LIKE THESE GIVE YOU NAVION COMFORT AND CONFIDENCE

- All-Around Sound-Proofed Cabin
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- Center Arm Rest in Rear Seat
- Recessed Arm Rests
- Thicker Foam Rubber Cushion
- 4 Individual Side Ash Trays
- Easy-Entrance Roll Back Canopy
- Thicker Plexiglas Windshields
- VHF Radio
- Improved Control Panel
- More Instruments
- Dual Fuel System

WHO'S WHERE

Hamilton Standard Division of United Aircraft Corp. has appointed **Charles M. Kearns** engineering manager. He takes over the job left vacant when **Erle Martin** became general manager two years ago. **Raymond P. Lambeck** becomes chief product engineer.

R. C. Blaylock, chief engineer of Curtiss-Wright's airplane division at Columbus, Ohio, has taken over the duties of director of engineering, the job left vacant when **W. K. Ebel** became vp-engineering of Canadair (AVIATION WEEK, Aug. 22).

KLM Royal Dutch Airlines has called **Frits Besancon** back to The Hague to be head of the company's production directorate. Since 1946 he had been stationed in Hollywood as KLM's technical manager on the West Coast.

Neil M. Harrison has been appointed manager of Lockheed Aircraft's field service and training department. He has been with Lockheed ten years, recently as manager of service engineering.

As part of the management reorganization of Fairchild Engine & Airplane Corp., **Joseph J. Mehl** has been released as assistant secretary and assistant comptroller. He has not announced his future plans.

Laminated Shim Co., Glenbrook, Conn., has appointed **H. Alberga** plant manager. He has been general manager and chief engineer of a consulting management firm.

Cleveland Graphite Bronze Co. has elected **Wilbur D. Prescott** as assistant treasurer, and **Charles A. Dilley** as assistant secretary . . . Skyline Products, Inc., Jamaica, N. Y., has appointed **R. E. Lister** vp-engineering . . . **G. L. MacLane, Jr.,** is manager of Westinghouse Electric's engineering laboratories . . . **Charles E. Sharp** has been named Chicago industrial branch manager for Brown Instrument division of Minneapolis-Honeywell Regulator Co. . . . Pardel Development Corp. has appointed **Clinton R. Harrower** special consultant for public relations and economic research . . . **Tom U. Engelman** has resigned as director of public relations for Grand Central Airport Co. and Cal-Aero Technical Institute . . . Pan American Airways has appointed **Arthur La Vove** public relations rep. in Los Angeles.

. . . and what they're doing

Ken Ellington, Republic Aviation's director of public relations, has tackled the "spare-time" job of chairman of a committee to arrange a "Cradle of American Aviation Day" in connection with the Nassau County (N. Y.) golden anniversary industrial show.

J. H. (Slim) Carmichael, Capital Airlines president, is a new member of the transportation and communications department committee of the U. S. Chamber of Commerce.

Joe Ferris, Northwest Airlines public relations director is vice chairman of the newly-formed PR advisory committee of International Air Transport Assn. . . . **Frank Muni,** formerly with Fairchild's public relations staff, is in the PR business at Room 1413, 52 Vanderbilt Avenue, New York City . . . **Gordon C. Sleeper,** one time sales manager for Republic's Seabee, has been elected a vice president of Frank B. Hall & Co., insurance brokers.

INDUSTRY OBSERVER

► McDonnell Voodoo (XF-88) will try to beat the world air speed record of 670 mph. at Muroc early this month. Present record is held by a North American F-86A powered by a General Electric J-47 turbojet. The Voodoo is powered by two Westinghouse J-34 turbojets and will make the record runs with standard military load including armament. USAF hopes to boost the speed record close to 700 mph. with the Voodoo.

► National Defense Department is putting renewed pressure on aircraft manufacturing firms to move inland from the east and west coasts. USAF is currently tackling Boeing on shifting emphasis from Seattle to Wichita. Navy has approached Grumman on moving from Long Island to the old Goodyear plant at Phoenix, Ariz. Both Lockheed and Chase Aircraft Corps. have been asked about moving into the government-owned plant at Tulsa operated by Douglas during the war. USAF is also anxious to use the government-owned plant at Marietta, Ga., where Bell built B-29s during the war.

► Convair is spearheading its Convair-Liner sales campaign with a specially modified, red and blue demonstrator that incorporates all of the latest modifications to the commercial transport. Interior is fitted with combination couch-berths and an executive compartment to indicate the Convair-Liner's potentialities as a private executive plane.

► U.S. lightplanes entered in the British National Air Races did not come through with any outstanding performance while both the Czech twin-engine Aero 45 and the French Norecrin proved considerably faster than any British executive-type lightplanes. The Czech entry averaged 163 mph. in winning one race with two French Norecrins averaging 162.5 and 160. Best U.S. performer was a Globe Swift that averaged 130 mph. around a closed course. An Ercoupe averaged 112.5 mph. in the same race.

► Hawkers's P-1040 jet fighter powered by a Rolls-Royce Nene Mark II won both the SBAC challenge cup and the Kemsley Trophy races, averaging 510 and 508 mph. respectively. DeHavilland Vampire Mark III powered by a Goblin Mark IV turbojet was second in both races averaging 480 and 470 mph. Since both races were on a handicap basis the DH 108 with swept wings averaged 488 mph. in the SBAC race but finished third. Both races were around a 20-mile quadrangular closed course similar to the old Thompson Trophy course at Cleveland.

► Convair is considering a redesigned outer wing panel containing integral fuel tanks to add range to the Convair-Liner. Limited range of the transport with its present fuel capacity has been a major problem for airlines planning to use the Convair-Liner on trunk line service.

► Boeing B-47, which is already in initial phases of large scale production at the Boeing Wichita plant, will be the standard USAF medium bomber. The B-47, powered by six General Electric J-47 turbojets, is now so short ranged, Lieut. Gen. Curtis LeMay testified, that it could not hit most Russian targets even from advance bases in North Africa and England. LeMay indicated the B-47 range will be increased substantially by aerial refueling. Later versions of the B-47 production models are scheduled to have more powerful jet engines and a substantially increased fuel capacity that will almost double the current gross weight of 125,000 lb.

► Lockheed has done an excellent job of fitting the interior of the highly-publicized "Dew Drop" Constellation for long range executive air travel. Big difference between this C-121B and the Douglas Independence (DC-6) used by President Truman is location of the main executive compartment. In the C-121B Lockheed has located this compartment close to the center of gravity where there is a minimum of tail buffeting and propeller and engine noise. The President's compartment in the DC-6 is in the tail where the normal buffeting is accentuated. A congressional subcommittee and newsmen recently returned to Washington from San Francisco aboard the C-121B nonstop in 8½ hours flying time. Lt. Col. Chester C. Moomaw, formerly of TWA, was the pilot.

Vol. 51, No. 10

AVIATION WEEK

Sept. 5, 1949

VINSON gave handshake and vindication to Symington, but headache to . . .

WORTH, with a promise of still more to come.

Symington and Defense Chiefs Exonerated

Probe finds nothing wrong in B-36 buying as author of 'anonymous' letter recants.

By Robert Hotz

House Armed Services Committee exonerated Air Force Secretary W. Stuart Symington, Defense Secretary Louis Johnson, and top U. S. Air Force generals from all charges of irregularity in the purchase of the Convair B-36 intercontinental bomber and cancellation of $573 million in other aircraft contracts.

Unanimous vote of the investigating committee and Counsel Joseph Keenan endorsed a resolution presented by Committee Chairman Carl Vinson (D., Ga.) stating that "not one iota, not one scintilla of evidence" had been unearthed during the three-week investigation to support charges contained in a nine-page document written by Cedric R. Worth and repeated on the House floor by Rep. James Van Zandt (R., Pa.). Worth, who was special assistant to Navy Undersecretary Dan Kimball when he wrote the document, was suspended from his $10,000-a-year Navy post after his admission of authorship.

▶ **Van Zandt Concedes**—Van Zandt, whose speech based on the anonymous document forced the committee's investigation, voted for the Vinson resolution and later told reporters he was now convinced the charges he aired were without foundation. Committee adjourned until Oct. 5 when it will pursue the investigation of the persons who aided Worth in preparation of the document and its circulation on Capitol Hill. Meanwhile a board of three non-flying admirals opened a Navy inquiry to determine the scope of official Navy personnel's participation in Worth's attack on the Air Force and the B-36 program.

Vinson offered his resolution, which wound up the first phase of the committee's investigation dealing with B-36 procurement, just after Counsel Joseph Keenan harried Worth through a series of questions in which the former Navy aide abjectly recanted in detail the charges contained in his once-anonymous document.

▶ **Identification Climax**—Identification of Worth as the long-sought anonymous letter-writer came as a sudden climax to what promised to be another day of routine testimony by military brass. Gen. Omar Bradley, new chairman of the Joint Chiefs of Staff, and Admiral Louis Denfeld, Navy JCS member, were standing by when Van Zandt opened the session with a demand that the committee proceed immediately with seeking to identify the author of the anonymous document.

Van Zandt said the identity of the author was known to Rep. Charles Deane (D., N. C.); Sen. Millard Tydings (D., Md.); Sen. Styles Bridges (R., N. H.), and Vinson. Counsel Keenan took the floor to point out that neither Vinson nor Symington (who had previously testified he could name the author) had furnished him with the writer's name. Keenan joined with Van Zandt in urging the author be identified and asked that Symington and Deane be called to the witness stand immediately.

Vinson urged "orderly procedure" with the witnesses at hand but was overruled by clamor from the committee who demanded Deane and Symington be called to the stand. Vinson reluctantly agreed and ordered Deane and Symington summoned to the hearing.

▶ **Tension Mounts**—Tension mounted as Gen. Bradley took the stand in the

interval and few listened to his high-pitched voice testifying that:

• **Intercontinental strategic bombing** was a vital part of JCS war plans.

• **USAF had been assigned** by JCS to do that bombing as its primary mission.

• **USAF decision** to use the B-36 as the weapon for intercontinental bombing had been approved by JCS.

Symington entered the hearing room during Bradley's testimony, after a hurried trip from the Pentagon. Vinson waved Admiral Denfeld aside at the conclusion of Bradley's testimony and called Symington to the stand. Symington strode through the crowded press section toward the stand with the confident air of a man about to land a knockout punch.

▶**Vinson Bombshell**—As Symington reached the witness stand Vinson hurled his bombshell:

"Step aside, Mr. Symington," he drawled. "Call Mr. Worth."

Surprised, Symington took a seat next to the witness chair while Worth bustled into the room. With a warning to the committee that "this is my star witness," Vinson took over questioning of Worth.

"Who delivered the anonymous letter to Congressman Deane?" Vinson asked.

"I did," Worth replied.

"Who wrote the letter?" Vinson asked.

"I wrote it," Worth replied.

▶**Help Detailed**—In subsequent questioning Worth testified the following people had assisted him in providing information for the memo and circulating it on Capitol Hill:

• **Glenn L. Martin,** former president and now chairman of the board of the Glenn L. Martin Co. of Baltimore. Worth testified that he made a trip to Martin's Baltimore office to confer about the memo, at which time Martin furnished him information contained therein. Martin later made an appointment to meet Worth alone at the Statler Hotel in Washington, at which time Worth gave Martin a copy of the completed memo. Martin told Worth he would give it to Sen. Tydings.

One paragraph in the memo charging that Maj. Gen. K. B. Wolfe, Air Materiel Command procurement director, tried to cancel aircraft turret contracts with the Martin Co. to switch the business to Emerson Electric Co., carried the notation: "The name of the man and the agency may be obtained from Mr. Martin."

Worth said he had not contacted any other aviation firm for information or assistance in circulating the memo.

• **Cmdr. Thomas Davies,** Naval bomber expert and pilot of the Lockheed Truculent Turtle (P2V) on its record 11,239-mi. nonstop flight from Australia to Ohio. Worth said Davies had accompanied him to Baltimore to see Glenn Martin and had furnished information regarding the Beverly Hills residence of Col. Frank C. Wolfe (AVIATION WEEK, Aug. 29); the alleged visits of Symington to the Indio, Calif., ranch of Floyd B. Odlum, president of Atlas Corp. and Convair board chairman; and USAF plans to cancel B-36 production.

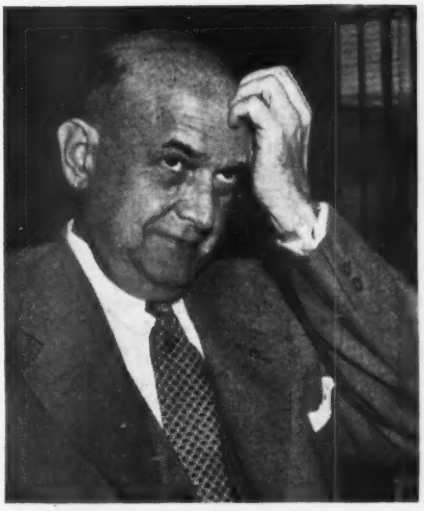
• **Harold Mosier,** Washington representative of the Glenn L. Martin Co. Worth said Mosier accompanied Davies and himself to the Baltimore conference with Martin.

• **Lieut. Samuel Ingram,** of the Office of Naval Operations. Worth said Ingram had furnished information for the memo and had made the original contact between Rep. Deane and Worth.

Also mentioned as Vinson questioned Worth on the source of information used in the memo were: Capt. Leroy C. Simpler, Navy aviation publications officer; and Hugh L. Hanson, civilian employe of the Bureau of Aeronautics. Worth said Simpler might have passed on some comment on the B-36 to him at a dinner party. Worth said he knew Hanson, who earlier had been a bone of contention between Symington and former Defense Secretary Forrestal over Hanson's letters to Washington newspapers disputing USAF performance data on the B-36 and the efficiency of strategic bombing.

"We'll show that plenty of people in the Navy Department had to do with this before we're through," Vinson commented.

▶**Kimball Testimony**—Worth denied that his immediate superior, Dan Kimball, knew he wrote the anonymous document. Worth changed his testimony that he had told Kimball he wrote the document about five days before his testimony before the committee, to read that he had mentioned to Kimball that his name had been mentioned on Capitol Hill in connection with the document. Kimball testified that he was busy with other matters and



JOHNSON got $25,000 in five years, but . . .

ODLUM got bad news in only ten days.

Vinson's Verdict

"There has not been, in the judgment of the committee, one iota, not one scintilla, of evidence offered thus far in these hearings that would support charges or insinuations that collusion, fraud, corruption, influence, or favoritism played any part whatsoever in the procurement of the B-36 bomber.

"There has been very substantial and very compelling evidence that the Air Force has selected this bomber and procured this bomber solely on the grounds that this is the best aircraft for its purpose available to this nation today.

"As of this time, I feel that the nation should know that the Secretary of the Air Force, Mr. Symington, the military leaders of the Air Force, and the Secretary of Defense have come through this inquiry without the slightest blemish—that these men continue to merit the complete confidence of the American people in their past actions and in the future."

Carl A. Vinson (D., Ga.), chairman, House Armed Services Committee, the full committee, and Special Counsel Joseph Keenan unanimously approved Vinson's statement.

told Worth at that time that if he knew anything about the document he would undoubtedly be called before the committee to testify.

Kimball said he had asked the Office of Naval Intelligence to investigate last April to determine if Navy personnel were involved in preparing or circulating the anonymous document. Admiral English, ONI chief, gave Kimball a verbal report that ONI was unable to find out the author's identity. Kimball then asked Worth to check on whether any "high-ranking Naval officers" were involved. Worth told Kimball he was certain no high-ranking Naval officers were involved. Later he told Kimball he could find out the author's identity if he could promise the author immunity. Kimball said immunity could not be offered.

▶ **Helped Newsmen**—Worth also testified he had given information for articles to Hanson W. Baldwin, New York Times military commentator, Annapolis graduate and former Naval officer; Jim Lucas, of Scripps-Howard and former Marine combat correspondent; Jerry Greene, N. Y. Daily News reporter and former Marine public relations officer; and Time Magazine staff members. He also prepared speeches for John Nicholas Brown, former Assistant Secretary of the Navy for Air.

Van Zandt sought to halt questioning of Worth on his dealings with the Pennsylvania congressman and Naval Reservist, rising to a point of order with the comment:

"What right has the committee to investigate the doings of a member of Congress on Capitol Hill?"

▶ **Van Zandt Overruled**—Vinson overruled Van Zandt with the comment:

"We have plenty of right."

Van Zandt then moved for adjournment. Vinson overruled him noting:

"The committee will not adjourn."

Worth testified he went to Capitol Hill to deliver a copy of the memo to Van Zandt because the Pennsylvanian "was showing considerable interest and concern over the National Defense Department with particular reference to the Navy." Worth said he called Van Zandt off the House floor and they conferred in the Capitol rotunda in the presence of Robert McChord, an Altoona, Pa., newspaperman.

▶ **Saw Van Zandt**—Worth said he told Van Zandt he had already given Rep. Deane the memo and that he thought the memo should also go to a Republican.

Worth said he had selected Van Zandt because of the Pennsylvanian's interest in defense. Worth said he told Van Zandt the memo dealt with the organization of forces within the Defense Department and the B-36. Worth said there was no doubt in his mind that Van Zandt knew he had written the memo when they talked in the Capitol.

▶ **Recants on Odlum**—When quizzed by Keenan on who were the "unscrupulous men" mentioned in his memo, Worth named Floyd Odlum, the Atlas Corp. and Consolidated-Vultee Aircraft Corp.

Keenan waved Worth into a chair close to the witness stand and then called Floyd Odlum to testify.

Odlum bitterly denied the charges and innuendoes in Worth's memo stating:

"There is not one rivet of politics in the B-36; there is not one ounce of special favoritism in its more than 300,000 pounds of loaded weight."

At the end of Odlum's testimony, Worth retracted his statements labeling Odlum and his firms as "unscrupulous."

▶ **Odlum's Deals**—Odlum revealed that he gained working control of Convair by buying approximately 18 percent of the firm's stock on the open market beginning in January, 1947. When Aviation Corp. decided to divest itself of its aircraft holdings, Atlas was left in control of Convair. Odlum said Atlas never purchased AVCO's interest in Convair.

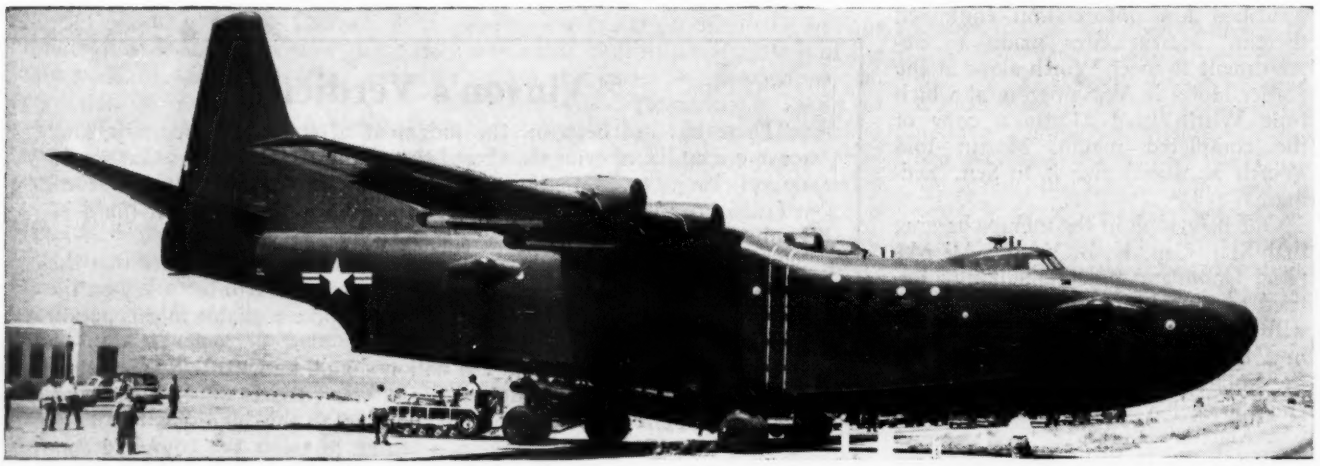
His postwar interest in the aircraft field was explained by Odlum as caused by the feeling that the industry had reached the bottom of its postwar collapse in 1946 with little work in the factories but large amounts of working capital that might be used to develop non-military aviation products. He surveyed the field in 1946 and bought a substantial interest in Bell Aircraft Corp. Later in the year Odlum decided that Boeing was a better bet and shifted his holdings from Bell to Boeing.

▶ **Cites Mistake**—He became interested in Convair after he heard rumors that the Lockheed-Convair merger was falling through (AVIATION WEEK, Aug. 29). Odlum said he thought Convair had considerable working capital but after he gained control he found he had made a mistake.

As an example of the difference between forecast and fact in the Convair situation, Odlum cited the previous management's estimate that 200 Convair-Liner transports could be built for 30,000 man-hours apiece. Odlum's staff re-calculated that it would require between 50- and 60,000 man-hours and the actual performance ran to 86,000 man-hours per plane. The difference between the Convair forecast and actual performance meant a $40 million loss on the project, Odlum said.

▶ **Bad News Fast**—Bad news on the Convair-Liner project reached him ten days after Atlas Corp. took over control of Convair with the rest coming within the next 60 days, Odlum testified. He said Convair's balance sheet looked fine but reality proved the company was in bad shape.

B-36 construction to date has not



Long, Clean Lines, and . . .

Extraordinarily clean lines of the Convair XP5Y-1 are shown in the head-on view indicating low profile drag. New side view, taken as the giant flying boat was moved to the edge of San Diego Bay for launching, shows details of the remotely-controlled gun turrets fore and aft. The unusual hull lines feature a high length-beam ratio. Bulge at the top of the vertical fin houses antenna,

been profitable for Convair, according to Odlum. He cited a USAF fee of $716,000 paid to Convair for B-36 work from 1941 to 1948 against $824,000 in interest paid during the same period by Convair on bank loans required to continue B-36 work. He said Convair's fee for B-36 work came to about 1.2 per cent of the project's cost.

▶ **1947 Loss**—During 1947 Convair lost $32 million and was forced to transfer $11 million out of surplus to absorb the anticipated 1948 loss, largely on the Convair-Liner project. Odlum also said Convair's inventories had to be written down substantially in terms of the value of finished products.

To tide Convair through its financial crisis, Atlas Corp. advanced $7 million and agreed to take whatever part of a special stock issue remained after public offering at $9 a share. Odlum said Convair would have gone into bankruptcy in 1947 without additional financing.

▶ **Odlum Wants Premium**—Commenting on the negotiations for sale of Atlas Corp.'s Convair stock to Robert Gross, president of Lockheed Aircraft Corp. (AVIATION WEEK, Aug. 29), Odlum said he would not sell out until he had made Convair's stock good and was paid a premium on his costs in putting the firm into shape. Gross said he was not willing to pay Odlum's premium and the talks ended there.

Odlum pointed out that the cost-plus-fixed-fee contract does not guarantee a contractor a profit on a military contract. He cited Convair's $200,000 loss on the B-36 project to date as an example and said this results from USAF rejecting many items submitted by companies as legitimate costs, such as public relations, advertising and executive overhead.

▶ **Stock Deals**—Odlum said at one time or another Atlas Corp. has been a substantial stockholder in Lockheed, Republic, Curtiss-Wright, Martin, Bell, Boeing and Northrop. He said aviation is more than a business to him and has been a personal hobby for many years.

Edward K. Weisl, senior partner in Simpson Thacher & Bartlett, testified that his firm had not been hired by the National Defense Establishment to handle cancellation of aircraft contracts, as charged in the Worth memo. The law firm is counsel for the Atlas Corp.

▶ **Johnson's Fees**—Defense Secretary Louis Johnson branded the Worth memo as utterly false and testified that he had become a Convair director at the request of President Franklin D. Roosevelt in 1941. At that time Rooesvelt was considering having the Navy take over Consolidated, with Artemus Gates, then Navy Assistant Secretary for Air, as president. In the later merger of Consolidated and Vultee, Johnson became a director when Presidential Secretary Stephen Early, now Undersecretary of Defense, informed Johnson of Roosevelt's desire.

Johnson submitted a statement showing he had been paid about $25,000 between 1941 and 1946 as a director of Convair and his law firm of Steptoe and Johnson had received fees of about $120,000 from Convair and associated companies for the same period.

June Plane Weight Climbs 109 Percent

Aircraft shipments by airframe weight totaled 2,998,600 lb. for June, 1949, an increase of 109 percent over the 1,436,700 lb. for May, according to the Department of Commerce.

June shipments of civil aircraft totaled 439 planes valued at $8.4 million, a decrease of 7 percent in number from 474 planes shipped in May, but an increase of 62 percent in value.

Military shipments accounted for 82 percent of June's airframe weight total (2,460,700 lb.); personal aircraft, 9 percent; and transport aircraft, 9 percent.

Aircraft engine horsepower for June was 3,539,400, a decrease of 9 percent from the 3,898,500 horsepower output in May. Military shipments accounted for 97 percent of the June horsepower.

Aircraft plant employment in June was 167,441, a drop of about 800 from 168,287 the previous month. Aircraft engine plant employment also showed a decrease from 41,656 in May to 41,180 in June.

AF Defeat

Budget Bureau wins its fight against long-range program.

Budget Bureau has won a victory in its fight against a long-range Air Force program.

New legislation setting an authorized personnel and aircraft strength to support a 70-group USAF makes no congressional declaration of policy for a steady USAF strength at a level adequate for national defense. It leaves aircraft procurement and strength to the shifting year-by-year decision of the appropriations committees.

▶ **Policy Declaration**—Industry leaders have vigorously urged the policy declaration, which, while not absolutely binding on the appropriations committees, would direct them. But Bureau of the Budget opposed it.

The measure—previously passed by the House and passed last week by the Senate—goes to a joint conference com-

. . . Narrow Beam of the XP5Y-1

while radar equipment is carried in the plastic nose section. Large size of the Allison T-40 turboprops is indicated by the empty nacelles on the XP5Y-1. Convair has installed dummy engines and propellers to simulate mass and weight of the Allison 5500-hp. turboprop powerplants during flutter tests. Built for the Navy, the plane is intended for patrol and anti-submarine duty.

mittee to iron out differences between the House and Senate versions when the House returns from its informal recess Sept. 21. Neither version, however, contains the long-range policy declaration the aircraft industry considers vital, not only to the maintenance of an adequate Air Force in being, but also to the maintenance of an adequate nucleus of manufacturing capacity.

▶ **Two Versions**—Following are details of the legislation:

Both House and Senate versions provide for the 502,000 personnel and 24,000 aircraft (225,000 airframe tons) strength necessary to support the so-called 70-group program. The Senate, however, deleted language in the House bill spelling out a strength of "70 . . . groups and 22 separate . . . squadrons, supplemented by 61 . . . reserve groups." The Senate Armed Services Committee pointedly remarked that with the size of a group flexible, the "70-group" stipulation is meaningless.

▶ **Senate Slashes**—The Senate bill eliminates the House bill's provision authorizing procurement of 5200 new planes annually.

The House bill provides that funds for aircraft procurement shall be available for the year they were appropriated and the four succeeding years and that research and development funds shall remain available until expended.

▶ **No Policy**—The Senate bill provides that funds "for procurement of technical military equipment and supplies . . . and for research and development shall remain available until expended unless otherwise provided in the appropriation act concerned." However, in view of the lack of a directing policy declaration for a long-range program, aircraft industry spokesmen are convinced that from here on procurement will be largely an annual decision by the appropriations committees.

▶ **Officer Strength**—The House bill authorized 27,500 regular commissioned officers. The Senate bill provides for only 22,400.

▶ **Prototype Development**—The Senate bill explicitly bars the use of USAF funds for development of prototypes intended primarily for commercial use. The language in the House bill is considered flexible to permit this. USAF, it is understood, favors the Senate stipulation on the grounds that it wants separate legislation and an additional appropriation for whatever commercial prototype development it might undertake. USAF leaders told senators they opposed eating into funds for military planes for commercial projects.

The Senate bill strikes out the House bill's provision authorizing the Army and Air Force to procure guided missiles. This would leave the jurisdictional dispute between the three services in this field to the Defense Secretary.

House to Fight Air Force Slash

Leaders oppose Senate's $800-million AF cut in current fiscal budget; will hold out for 58-group program.

House leaders are set to take an adamant stand against the Senate's $800 million slash in Air Force appropriations for the current fiscal year as predicted in AVIATION WEEK, Aug. 1.

On a 49-to-9 roll-call vote, the Senate last week confirmed the action of its Appropriations Committee in a budget cutback which would reduce USAF's strength from the 58 groups approved by the House to the 48-group program recommended by the Bureau of the Budget and endorsed by Secretary of Defense Louis Johnson and Air Force Secretary Stuart Symington.

▶ **Challenge Cut**—Top House military leaders immediately challenged the action.

Rep. George Mahon (D., Tex.), chairman of the House Armed Services Appropriations subcommittee, told AVIATION WEEK that the $6,215,709,000 USAF budget ($4,222,954,000 cash and $1,992,755,000 contract authorization) passed by the House is "the bare minimum required for adequate national defense." The Senate approved only $5,415,887,000, slashing the cash allocation by $222,067,000 (to $4,000,887,000) and the contract authorization by $577,755,000 (to $1,415,000,000). Mahon will lead the House conferees in the House-Senate conference committee which will start resolving differences in their versions of the 1950 fiscal year Department of Defense budget as soon as the House's informal recess comes to an end September 21.

▶ **Stand Pat**—Mahon said his first move will be to make a motion that the House formally instruct its conferees by a record vote to stand pat on the House-approved USAF budget. This will strengthen their hand in conference.

Rep. Carl Vinson (D., Ga.), chairman of the House Armed Services Committee, publicly announced he would buttress Mahon in refusing to go along on the Senate's USAF slash.

▶ **Navy Budget**—Naval Aviation's budget is non-controversial. The Senate accepted the $1,618,667,000 ($1,042,121,000 cash and $576,546,000 contract authorization) recommended by the Bureau of the Budget and passed by the House.

Refusal of Johnson and Symington, under senatorial questioning at appropriations committee hearings, to concede need for more than a 48-group USAF was principally responsible for the overwhelming Senate vote to slash the 58-group program approved by the House. Both firmly supported the President's recommendation for the smaller program.

▶ **Symington Backs Down**—Over a score of Senators who last year backed Symington to provide funds to build up to a 70-group Air Force, over Administration opposition, backed down with him this year. Minority Leader Sen. Kenneth Wherry's (R., Nebr.) observation reflected their position:

"It was on the basis of his (Symington's) judgment that I felt we should have a 70-group Air Force last year. Now the Secretary for Air comes before Congress and is perfectly willing to take a 48-group Air Force. Once again I rely upon his judgment."

▶ **Airpower Roll**—The nine who actually voted against the slash were: Sen. Lister Hill (D., Ala.), Sen. Lyndon Johnson (D., Tex.), Sen. William Knowland (R., Calif.), Sen. Wayne Morse (R., Oreg.), Sen. Karl Mundt (R., S. D.), Sen. Joseph O'Mahoney (D., Wyo.), Sen. Claude Pepper (D., Fla.), Sen. Margaret Smith (R., Me.), and Sen. John Sparkman (D., Ala.). Sen. Brien McMahon (D., Conn.), chairman of the Joint Atomic Energy Committee, and Sen. Warren Magnuson (D., Wash.), not present, were recorded against the cut by "pairing."

Leading the fight, Knowland quoted from last year's reports of the President's Air Policy Commission and the Joint Congressional Aviation Policy Board declaring a 70-group USAF as the minimum for adequate peacetime defense.

▶ **Two Factors**—"When those who know the situation best have said the American Air Force in being and the atomic weapon are probably the two factors which have prevented, up to this very hour, overt aggression by the Soviet power against the free nations of the world," the Californian observed, "it simply does not make sense for us at this very time, not only not to come up to the minimum standard which competent testimony has demonstrated should be done, but actually to reverse the process and start cutting our Air Force in being."

O'Mahoney explained the opposition of Johnson and Symington to a 58-group program with, "they are under orders to back the Bureau of the Budget's recommendation."

FINANCIAL

Market Analysts Study Airlines

Standard & Poor's service sees favorable outlook for carriers' share, but notes some uncertain factors.

A favorable view of securities of the airline group is taken in a current review published by Standard & Poor's Corp., a leading statistical and investment advisory organization.

In its weekly Outlook, the statistical service declared that after three years of poor results, the airlines are now realizing substantial profits, reflecting increased passenger traffic and operating efficiency, higher mail rates, tax credits and the acute leverage character of the business (AVIATION WEEK, Aug. 29, 1949).

► **Gains Held**—Due to better regularity, family fares, coach service and an excellent safety record, combined revenue passenger-miles of the 16 domestic trunk-lines are estimated to have maintained the 15.5 percent gain during the second quarter. The same increase was recorded in the first quarter over the like period of 1948.

Meanwhile, passenger load factor break-even points were reduced by higher mail rates, economy measures, and greater use of more efficient new planes. Pointed reference is also made to the high leverage factor which is characteristic of the industry during periods of rising traffic.

In an analysis of net operating profit for the trunk lines, Standard & Poor's cites the spectacular recovery in net income during the second quarter staged by American, Northwest, TWA, and United, among others.

► **Comebacks**—In more specific terms, during the second quarter, American's net income skyrocketed from $186,651 for that 1948 period to $3,758,430 for the current quarter. Northwest, for these comparative periods, converted a deficit of $172,515 to a net profit of $1,913,885. Such results, however, combine the carrier's domestic and overseas operations. TWA reversed a deficit of $66,749 and made a net profit of $3,626,443 in the comparative second quarters. At the same time, United showed an increase from $910,134 to $3,147,382 in net income.

For the industry as a whole, a net income of about $7.7 million was realized during the current first half compared with a net deficit of $10.7 million reported last year for the like period.

► **Outlook Good**—The advisory organization maintains a favorable view for the airlines during the second half of the year. Accidents of nonscheduled operators and the usual seasonal letdown were reported to have reduced domestic passenger traffic in July, 1949, over June, although the total was still up modestly over July, 1948. An Eastern DC-3 crash on July 30 apparently was restrictive to traffic early in August, according to this account.

Nevertheless, better flight equipment and the drastic contraction in activities of irregular air carriers under the recently instituted regulation 292.1, are all expected to be advantageous to the industry during the final half of the year. In addition, carrying of military personnel at a 10 percent discount since July 1, 1949, should add up to $10 million annually to industry revenues, with the transcontinental airlines deriving the greatest benefit.

Assuming no more accidents by the scheduled airlines, revenue passenger-miles of the 16 domestic trunklines may attain a record level of about 12.5 billion for 1949, up about 12.5 percent from 1948, according to Standard & Poor's.

The advisory service advances the belief that with tax credits available in many instances, "good profits from combined international overseas, and domestic operations are indicated for practically all companies except Colonial and Northeast, while those of Northwest and TWA likely will hover around the break-even point. In particular, substantially increased profits for Capital and Eastern and sensational recovery for American, National and United are likely."

► **Cautionary Note**—A note of caution, however, is sounded on the adverse factors brought into play because of the good earnings. First, higher wages and salaries may be sought by a large segment of employes. Second, higher airport landing fees are due to be imposed on principal terminal cities. Third, some state governments having tapped major sources of revenues, are talking of levying taxes on airline fuel.

Further, if present earning power continues, the Civil Aeronautics Board will be subjected to greater congressional pressure to reduce mail rates and pending applications will receive harsher treatment. Thus far, only the mail rates paid American and Eastern are considered by the CAB to be in line with the service rendered.

The analysis asserts that if all or some of the contingencies mentioned materialize, break-even points would be raised importantly. Moreover, the present wave of prosperity is declared to have obscured basic unsound industry conditions which still exist. Funds requested by the CAB to conduct studies leading to the correction of basic problems were voted down by a Senate committee recently.

In addition, the Board's regular appropriations for routine operations were cut, and the CAB's 1949 industry program of economic reform apparently is now meaningless, according to Standard & Poor's.

The study further observes that industry profit margins are already down from those of the June quarter, the heavy debt structure further accelerates any decline in net income, while most companies will have exhausted available tax credits by the end of the year. Therefore, a note of caution in current appraisal of airline stocks is considered necessary by the analysis.

► **Silver Lining**—Nevertheless, market action for the airline group is considered favorable. Airline shares represent one of the few stock classifications that erased virtually all their bull-market gain in recent years. After a spectacular rise of 500 percent in the period from 1942 through 1945, this group in late 1948 dropped to the lowest level since November, 1942.

Subsequent mail rate awards and record passenger traffic promoted a strong recovery through March, 1949, while the trend was irregularly upward thereafter. Shares of the group are now almost 20 percent higher than at the 1948 year-end, whereas industrial shares generally are up less than 3½ percent.

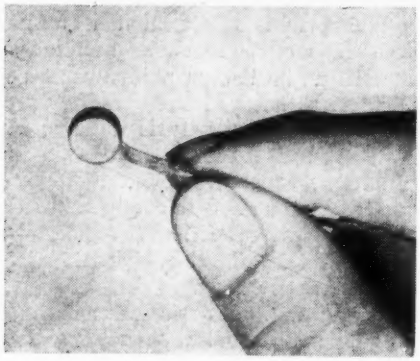
According to the report, this favorable showing is expected to continue. Attention is called, however, to the speculative quality of the airlines equities, with the admonition that they should be acquired by only those able to assume the risks involved.

Standard & Poor's assert that in view of the varying degrees of vulnerability to possible mail-rate reductions and the existing basic problems of the industry, selection should be confined to the stronger situations, such as American and Eastern.

(Ed. Note: The opinions reviewed are those of the advisory service and not necessarily those of this writer. Neither the writer nor AVIATION WEEK stands sponsor to or endorses the advisory service indicated above.)

—Selig Altschul

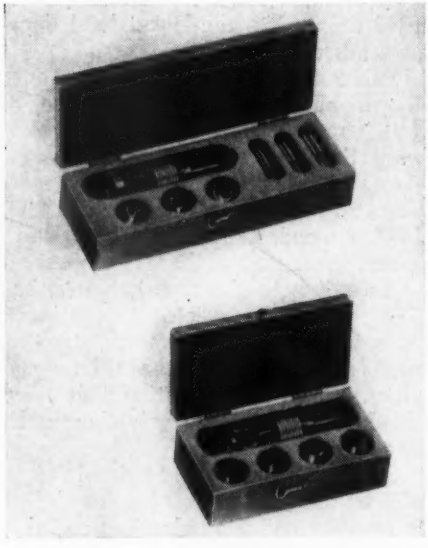
NEW AVIATION PRODUCTS



Measures Vibration

Tiny vibration frequency pickup instrument, "Vibratab," offered by **Telecomputing Corp.**, Burbank, Calif., is claimed to open new fields of vibration study, because it will fit into tight spaces formerly inaccessible to larger units.

About size of aspirin tablet and weighing less than gram, instrument is said to be valuable tool in rocket and missile study, flight testing of aircraft control surfaces, wind tunnel experimentation, powerplant and accessory testing and other applications requiring vibration research. Device has life expectancy of 100-300 hr. and will respond to acceleration frequencies from 3 to over 2000 cps.

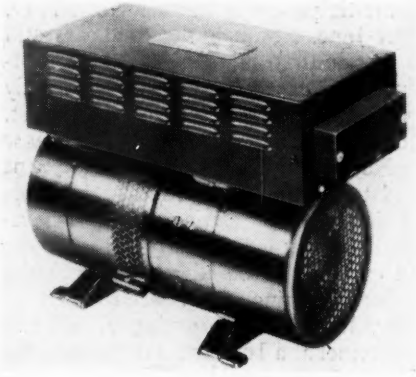


For Fastener Removal

Tools for removing Dzus and Hi-Shear fasteners are offered by **Aircraft Tools, Inc.**, 2306 E. 38 St., Los Angeles, Calif., in separate kits, AT-590-E and AT-590-C.

Dzus fastener removal kit has special shop countersink unit and three matched sets of collar cutters and collar grippers, engineered to individual fastener dimensions. Grippers are designed to hold fastener collars rigid during cutting operation. It's stated tools enable operator to remove Dzus collars quickly and efficiently, without marring metal surface.

Hi-Shear fastener removal kit has special "Micro-Set" stop countersink unit to prevent mutilation to skin surface. Tool is designed to guide collar cutter to the fastener locking collar. Four collar cutters are supplied in this kit.



Electronic Inverter

Aircraft inverter made by **Eicor, Inc.**, Chicago, Ill., electronically controls output voltage within ± 1 percent and output frequency within a $1\frac{1}{2}$ percent range. Unit operates on 26-29v. d.c. to supply 115v. a.c., 400c. current rated at 1500-2500 volt amp.

Electronic control, governing both input and output on rotary inverter, is said to be completely new development.

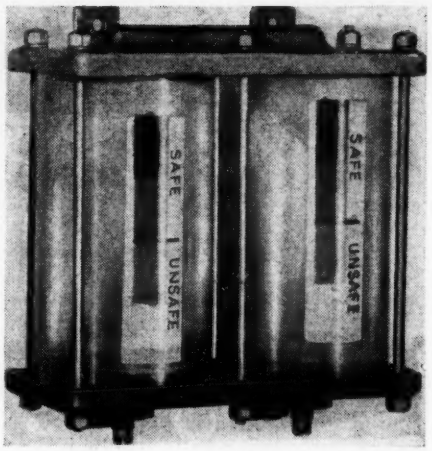
Stable Graphite Parts

Stable graphite film which can be applied to practically any surface has been announced **Electrofilm Corp.**, 7116 Laurel Canyon Blvd., N. Hollywood, Calif.

Although coating is only .00015-.0005 in. thick, it is said to have high resistance to abrasion and exceptional bearing strength. Adhesion also is high, and on metal and most other materials, product is sufficiently diffused into surfaces to insure presence of graphite even when external coating is removed.

New film can be sprayed on or applied by dipping. It is stated to have been successfully used on metal, plastics, rubber and ceramics. Material can be coated over plated parts.

Product is represented to be unaffected by solvents or weather and, under certain conditions, can withstand temperatures of −120 to 2000 F.



Removes Moisture

For maintaining dry air in airborne radar units and adaptable for moisture-free pressurizing of engine ignition harness, special filter-dehydrator is announced by **Lear, Inc.**, Elyria, Ohio.

Device has transparent tubes containing grade A, high-adsorption-capacity silica gel. Attached humidity color card indicates silica gel colors at 0, 20, 40, and 60 percent relative humidity. Two-tube model (shown) has 60-cu. in. volume, will remove and hold 6 to 8 oz. of water vapor from transient air or gas. Unit also has wire mesh screens and filter pads to remove foreign matter.

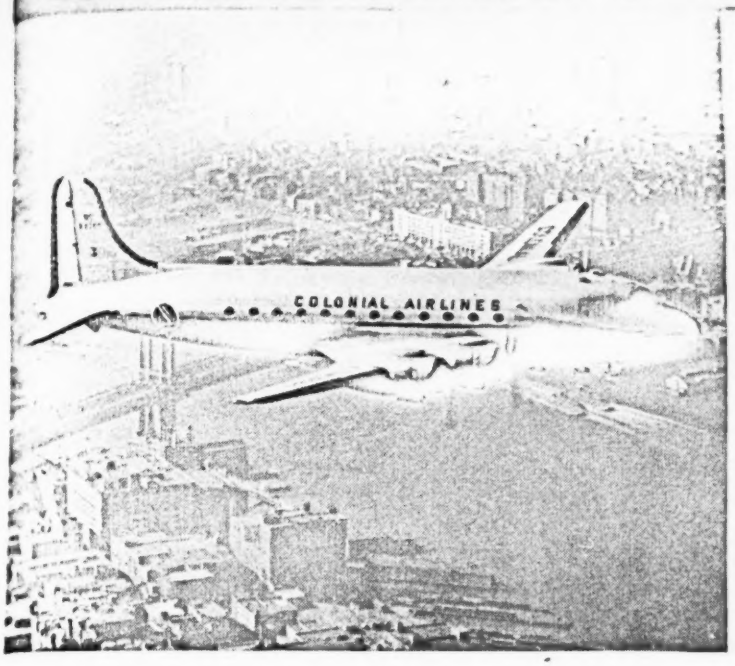
Grade A silica gel used has $\frac{1}{2}$-$\frac{1}{2}$ more water adsorption capacity than lower grades and is obtainable in metal containers. Dehydrators may be modified in tube diameter and length for installation requirements, or to increase time between refills.

For Soldering Jobs

Improved 250-watt soldering gun, Model WD-250, offered by **Weller Mfg. Co.**, Easton, Pa., is stated to be same size and only few ounces heavier than previous 135-watt unit produced by company.

Device has built-in spotlight and heats-up in 5 seconds. Improved tip design provides more copper in chisel-shaped head.

Commercial Airliner or Private Fly-About...



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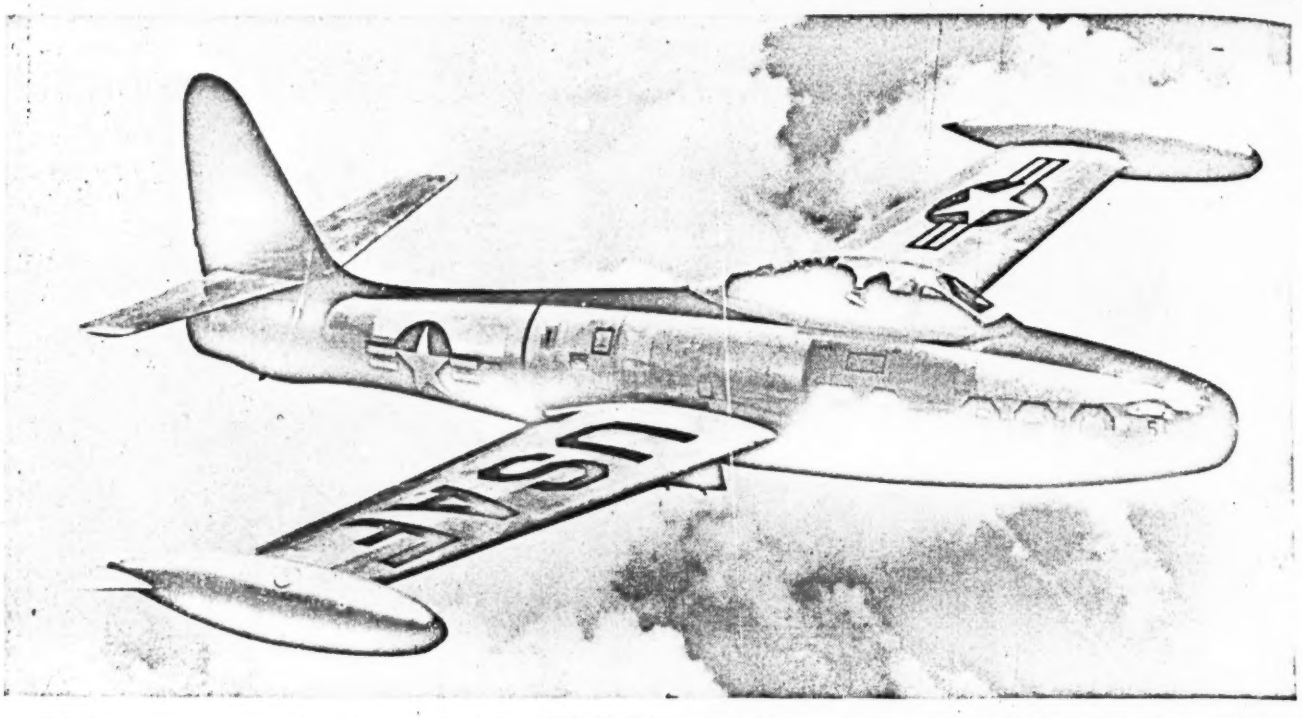
AVIATION PRODUCTS SOCONY-VACUUM



Solution to numerous problems in research, design, flight-handling and maintenance are merged in this latest Thunderjet—F-84E.

F-84 Thunderjet: A Story of Development

Craft's history points up difficult hurdles encountered in engineering jet fighters to meet service demands.

By Robert McLarren

It is now no longer prudent to refer to the jet airplane as a "new field," for its history covers more than five years of intensive effort. No longer are jet craft solely experimental models "under development." Rather, they are now standard types in fighter, light and medium bombardment categories in the Air Force. Today, there is ample evidence available to assess the development phase of turbojet-powered aircraft.

A typical example of intensive development work in the jet plane category is the Republic Thunderjet fighter, now old enough to have pioneered in its particular field (axial-flow turbojet powerplant); yet new enough for brand new models to be coming off the production line.

But it is typical for a more important reason—its development history includes a fair share of early troubles culminating in a "critical" situation; an enormous effort to solve this difficulty and its eventual solution by an ingeniously simple device; a cross-section of "changes" ordered by the customer, and many instigated by the vendor; and the continuing addition of new devices developed during the interim between prototype and latest model.

The F-84 Thunderjet began life in 1944 with the General Electric TG-180 (J-35) axial-flow turbojet engine, which the Air Force requested Republic to install in a modified version of its highly successful P-47 Thunderbolt fighter, then in quantity production.

After numerous design studies it became evident to the company's engineers that a more effective solution lay in the design of a completely new airplane built around this new engine. Approval was obtained from the Air Force for a wholly new project designated the XP-84.

▶ **Performance Considerations**—Requirements called for a penetration fighter possessing high speed and long range, two mutually exclusive performance characteristics. This performance constituted the sole purpose of the project, and to which the Air Force allotted 100 percent evaluation—a figure subsequently drastically revised.

Since high speed required a thin profile, long range a thick one, the initial compromise in the project was on selection of an airfoil. A consideration that militated against a thin, high-speed section was the decision to place the landing gear in the wing. This was to keep the fuselage as small as possible lest the advantage of the axial-flow engine be lost.

Requirements for a heavy load and a high operating altitude required for maximum engine performance also ruled out a thin, symmetrical profile. As a result, a slightly cambered profile with 12 percent maximum thickness and 0.94 percent maximum camber was designed. It consists, principally, of an elliptical section with a slightly reflexed trailing edge. It has a design lift coefficient of 0.17 at zero degree angle-of-attack and maximum thickness at 45 percent chord. Its designation is the Republic R-4, 45-1512-a-.9 airfoil section.

▶ **Wing Geometry**—This was the next problem. A constant section thickness ratio was chosen throughout the span and a taper ratio of 0.57 was selected to provide a semi-elliptical load distribution.

The aspect ratio problem was thoroughly studied, the compromise lying between a low value for high speed and a high value for long range. Ratio of 5.10 was selected as optimum for the particular problem presented.

To provide satisfactory stall characteristics, 2 deg. of washout were pro-

vided by use of zero degree root incidence continued to approximately half the semi-span, outboard of which the washout begins and continues to −2 deg. incidence at the tip.

▶**Flap Aileron Factors**—Partial span slotted flaps of 26 percent chord are used, with the linkage moving the flap directly aft about 13 percent chord, after which it rotates down to a full 40-deg. deflection.

Design maximum speed of the plane presented some unknown aileron problems, accommodated by a control boost system adjustable in flight by the pilot from zero to 10:1 ratio, a moderately high value but one intended to cover unknown control forces. It has since been found that most pilots use a ratio of 6:1 or less, because of the naturally low stick forces.

As a safety measure, the ailerons also were equipped with a sealed, internal aerodynamic balance to provide some reduction in stick forces in event of power boost failure. While these forces are somewhat high, they are well within pilot capabilities, since the airplane has been flown repeatedly at indicated speeds up to 500 mph., with the boost system inoperative and without difficulty on the part of pilot.

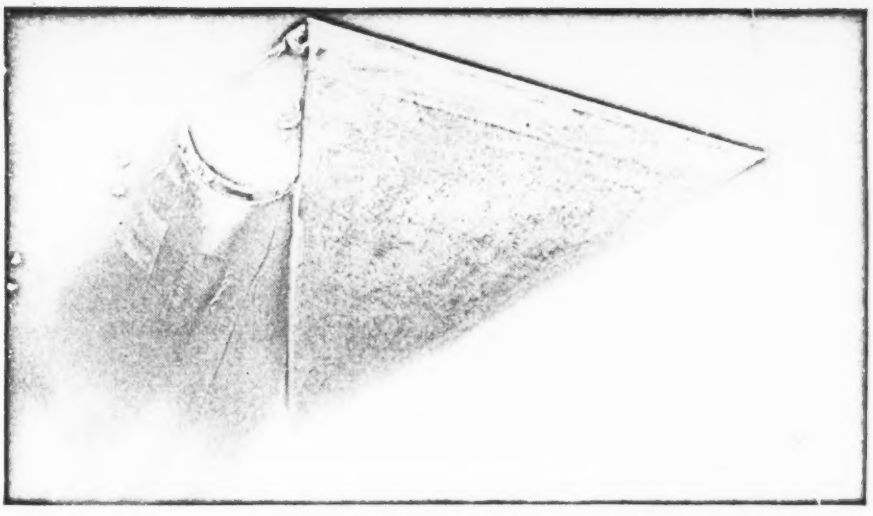
▶**Body, Tail**—Primary consideration in fuselage layout was the adoption of a streamlined, low-drag form, whose maximum dimension within the surface of revolution was determined by powerplant diameter. (Maximum vertical dimension is, of course, at the cockpit, which lies outside the surface of revolution.) By use of careful fabrication techniques, this form produced a critical Mach number above that of the wing.

Empennage is of a straight-forward design. Horizontal tail has an area of 48.4 sq. ft., span of 14 ft. 11⅛ in. and aspect ratio of 4.65. Profile is a 10 percent symmetrical section of the same family as the wing. Dihedral is same as the wing—5 deg. The stabilizer is attached to the fin at zero degree incidence at a point 35 in. above the extension of the wing root section.

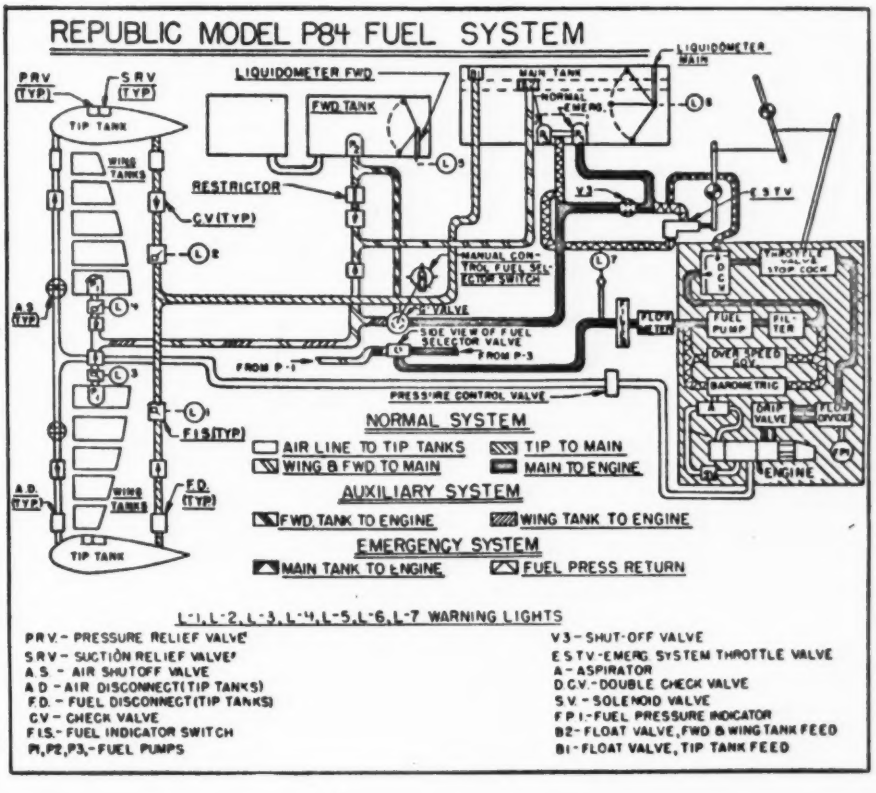
Elevator is 30 percent of the horizontal tail chord and uses an internal sealed balance. Trailing edge of the elevator is located just forward of the rudder hinge line and inflow to the jet has no measurable effect on the elevator hinge moments due to this upward, forward position.

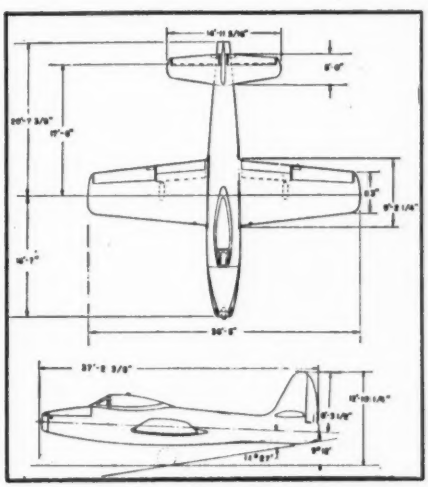
Vertical tail is relatively large, with an area of 30.4 sq. ft. and aspect ratio of 1.68. It uses the same symmetrical 10 percent profile as the horizontal surfaces. Rudder is only 24.7 percent of the vertical tail area and uses an internal sealed balance.

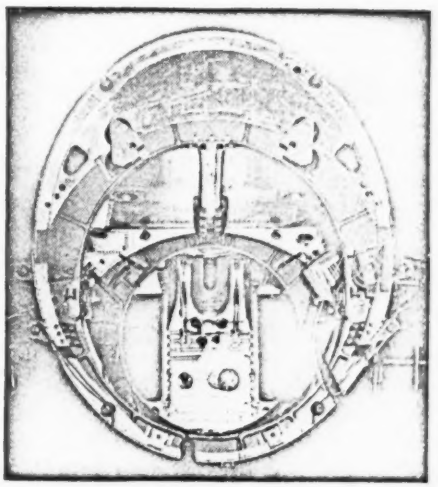
As an aid to spin recovery, both dorsal and ventral fins are used on the aft fuselage. Although both are small, they are quite effective as shown by



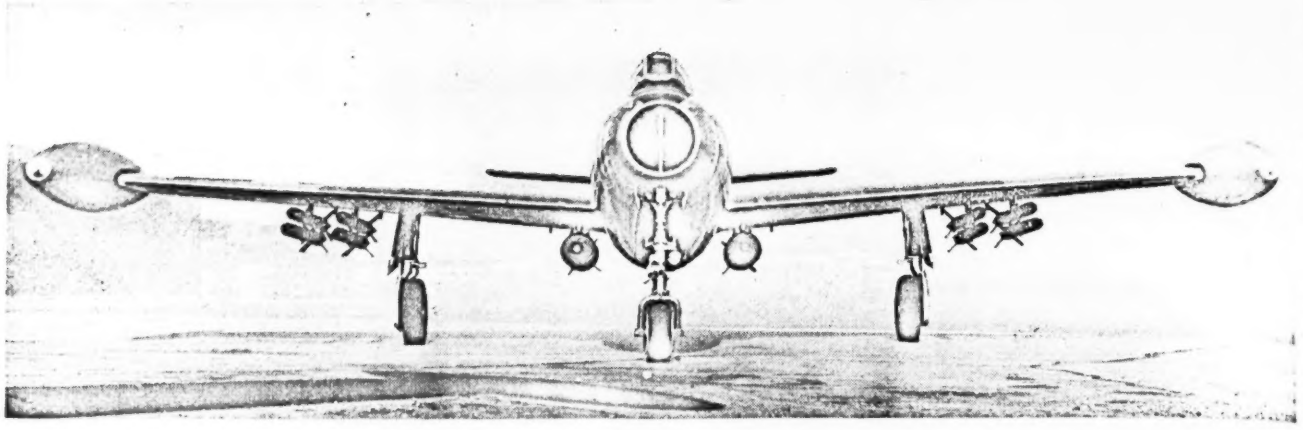
Tip tank fin was answer to stability problem. Use allows speeds up to that of clean craft.







Left: Plan, elevation of F-84. Right: Four bolts on fuselage simplify engine removal.



Pylons carrying bombs 11 in. below wings remedied trim difficulty. Rockets have been fired at airplane speeds up to 550 mph.

NACA spin tunnel investigations.

▶ **General Makeup**—Structure of the Thunderjet is conventional with the exception of the wing carry-through arrangement in the fuselage.

Wing structure uses a conventional two-spar box beam with the formed leading edge comprising a D-shaped torsion cell. Necessity for stowage of landing gear in the wing created a minor structural problem in that large skin cutouts were required. These were also necessary for retractable bomb racks and wing gun case and link ejection chutes.

For this reason, the load is gradually taken out of the skin and placed in the spar caps proceeding inboard to the fuselage fittings. The wing makes generous use of 75ST extrusions and forgings in the spar caps, the auxiliary spar and adjacent ribs supporting landing gear loads.

Because entire fuselage cross-section is occupied by the engine, it was impractical to carry the wing through without an excessive sacrifice in body slimness. Therefore, Republic engineers resorted to forged ring bulkheads used in the XF-12 Rainbow, four-engined reconnaissance craft. These are heat-treated steel forgings split in half and spliced top and bottom at the vertical centerline. These fittings have sustained 124 percent of the ultimate design bending moment.

Principal design features and installation problems of the Thunderjet powerplant were discussed in AVIATION WEEK, May 24, 1948.

▶ **Fuel-Use Sequence**—Because of long-range performance requirements, a variety of tank locations and capacities was provided. Fuel cells were inserted between the ribs and spars of each wing panel, with the five cells in each wing interconnected to form a single tank. There are two fuselage tanks that are interconnected to form a single tank, and a main fuselage tank. In addition, there are wing tip tanks.

This variety of tank locations presented problems of airplane trim changes due to fuel consumption. The engine is supplied from the main fuselage tank, all other tanks emptying into this by a series of tank and booster pump speed selections according to a predetermined sequence.

Tip and main tanks have little effect on the plane's C.G., but emptying of the forward fuselage and wing tanks produced a pronounced change in the airplane trim.

To accommodate this difficulty, the following sequence of tank selection was used: 1, Wing tip tanks; 2, top half of the forward fuselage tank; 3, wing tanks; 4, bottom half of the forward fuselage tank; and 5, main tank.

Cabin pressurization is obtained by a high-pressure bleed from engine compressor and is regulated by control of air out-flow from the cockpit.

Cockpit cooling is via a simple intercooler turbine system. Compressor discharge air is routed through an intercooler, which, at airplane maximum sea level speed, reduces the temperature from 450 to 220 F. This is then further reduced to about 30 F. by passing it through an expansion turbine. The work of expansion is absorbed by a fan that pumps cooling air through the intercooler.

Heating is accomplished by taking compressed air directly from the engine compressor casing and mixing it with the cold air from the expansion turbine. An automatic regulator controls this mixture within ± 10 deg. F. of the temperature selected by pilot.

▶ **Initial Trials**—The prototype was completed in December, 1945 and loaded aboard the Boeing XC-97 transport and flown to Muroc Air Force Base, Calif. in great secrecy. It made its first test flight Feb. 28, 1946, at Muroc, with Maj. Wallace A. Lien at the controls. Performance of three prototypes immediately proved spectacular and a U. S. speed record of 611 mph., was established Sept. 7, 1946.

Subsequently, the plane attained 621 mph. in a single pass over the record course, narrowly missing a world record by failing to exceed the existing British-held record of 616 mph. by the required average 5 mph. in four passes. After passing the required Air Force evaluation tests, the aircraft was released for production on an initial order for 100. Subsequent orders have swelled this total to 998 planes in various models.

The first group of 15 YP-84A airplanes was assigned to Muroc and Wright-Patterson Air Force Base, Dayton, Ohio for further evaluation and pilot familiarization flying, and the real work of development got under way.

▶ **Tuck-Up Tendency**—One of the first unusual characteristics of the airplane discovered by Republic test pilots was a tendency to "tuck up" rather than the more conventional "tuck under" of other high-speed aircraft.

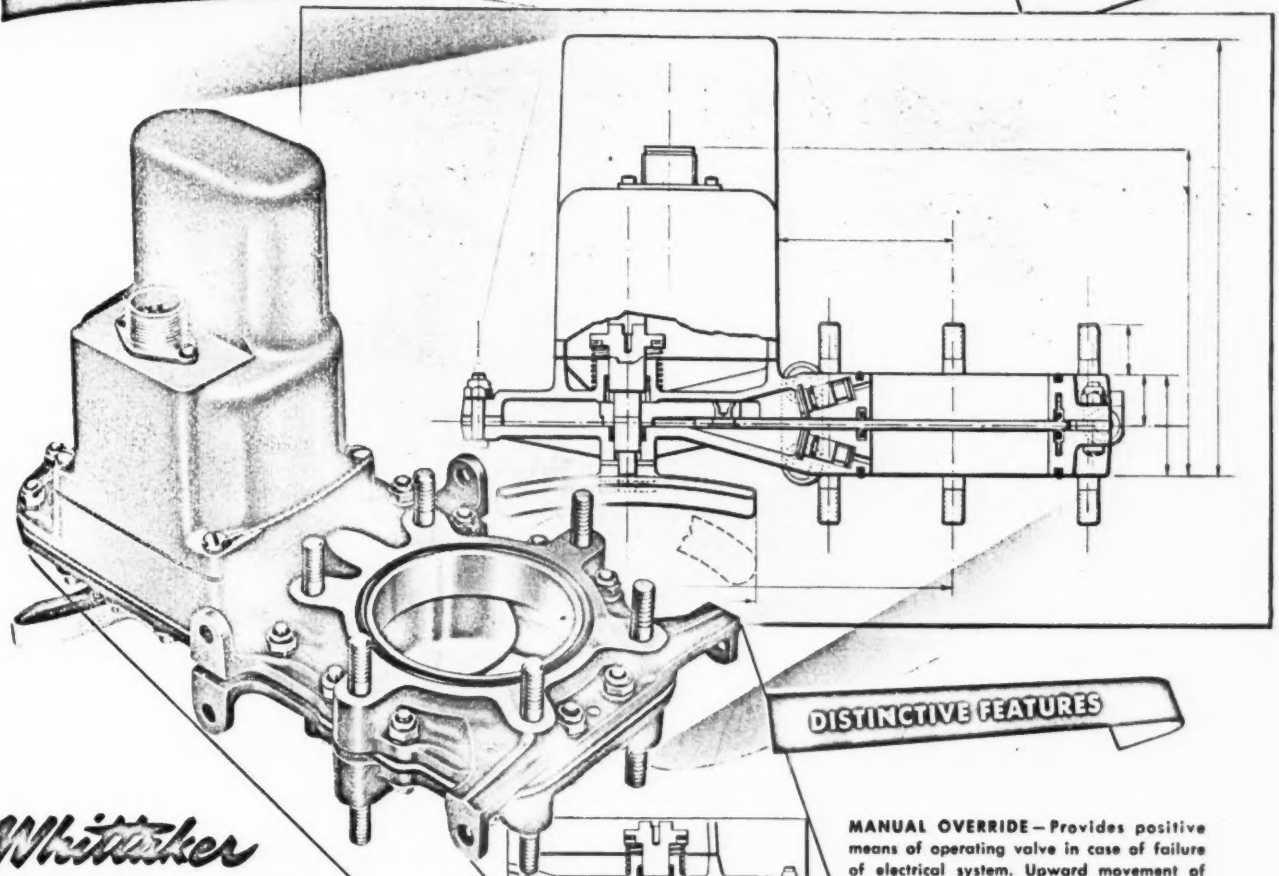
Power of the F-84 is sufficient to fly the airplane at a speed in excess of its critical Mach number, and when this latter value is approached buffeting is encountered and the airplane trim is changed to a nose-up pitching moment in contrast to the tendency of other fighter and research airplanes to nose down under compressibility effects.

Danger of the latter phenomenon is obvious and has created the necessity for high-altitude speed courses. However, the unique tuck-up tendency of the F-84 is actually a safety feature and at least one pilot owes his life to this feature after losing consciousness at high altitude and "coming to" at less than 10,000 ft. *in a climb.*

Despite exhaustive theoretical analysis and wake survey tests, no explanation of this phenomenon is yet available for publication. It has proved difficult to obtain downwash angle wake survey data accurate enough for useful analysis. A larger horizontal tail is being installed on the airplane to determine its effect on this phenomenon.

NACA conducted tests on a modified trailing edge angle of the airfoil and results indicated that a smaller trailing edge angle would probably help the severity and delay the point at which tuck-up occurs. But this has not yet materialized in Republic flight tests.

PROJECTED . . . INTO THE FUTURE



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CONTOUR SEAL—Exclusive Whittaker metallic seal provides a positive-acting non-binding seal with life from 10 to 20 times that of ordinary rubber seals. Metallic seal permits dry cycling without damage to seal.

THERMAL RELIEF VALVES—Built-in thermal relief valves protect slide against excessive fluid pressures caused by thermal expansion of fluid in line.

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WHITTAKER's versatile engineering staff is constantly developing new designs to meet the everchanging requirements of the aircraft industry. Typical of these developments is the new WHITTAKER line of motor slide valves for in-flight refueling. Here are 3" and 4" shut-off valves that incorporate all of the flight-proven advantages of WHITTAKER motor-operated slide valves, yet are individually engineered to meet the specialized requirements of single point fueling systems. They safely handle flows up to 600 gallons-per-minute. WHITTAKER's exclusive "contour seal" assures a positive-acting, non-binding seal with straight-through, unimpeded flow when open; and clean-cut, drop-tight sealing when shut. Special unique override permits either power or manual operation of valve. These are but a few of the many outstanding advantages of WHITTAKER 3" and 4" shut-off valves. For air-to-air refueling systems, specify WHITTAKER single point fueling valves—the newest addition to the WHITTAKER line. WM. R. WHITTAKER CO., LTD., 915 North Citrus Avenue, Los Angeles 38, California.

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First IN PERFORMANCE

First WITH VALVES THAT ARE FIRST CHOICE IN INDUSTRY

▶ **Armament**—In preparation for delivery of the airplane to tactical units, several additional items of equipment were requested by the Air Force, resulting in the F-84B model.

These included addition of retractable rocket launchers, radio compass, ejection seat, and a change in armament from the wartime M2 machine gun, which had a rate-of-fire of about 850 rounds per minute, to the new M3 gun with rate-of-fire of 12-1300 rounds per minute.

This gun installation has proved practically trouble-free in operation and is considered an outstanding design job by the Air Force.

The F-84B model went into service with the 14th Fighter Group, Dow Air Force Base, Bangor, Me. beginning in November, 1947—just in time to encounter severe winter operations.

▶ **Engines Switched**—The YP-84A and the F-84B are equipped with the Allison J-35-A-15 engine, whose fuel system and its control had proved unsatisfactory in the particular installation of the Thunderjet fighter.

To correct this difficulty, Republic returned to the Allison J-35-A-13 engine, which, although the next preceding model, incorporated a fuel system more adaptable to the F-84 system of operation.

Because an engine change effects interchangeability, this new model was designated the F-84C.

As the new model continued in production, change requests continued to flow in from field activities channeled through the Air Materiel Command at Wright Field. (The 20th Fighter Group, Shaw Air Force Base, Sumter, S. C. and the 33rd Fighter Group, originally at Roswell, New Mex. but now located at Otis Air Force Base, Falmouth, Mass., received the Thunderjet. The F-84 has since become operational equipment for the 31st Fighter Group at Albany, Ga. and the 78th Fighter Group, Hamilton Air Force Base, San Rafael, Calif.)

An improved bomb release was installed that gave sequence control.

A new fire seal was provided for the engine and further changes were made in the fuel system to reduce some of the automatic features in favor of improved semi-manual operation.

▶ **Maintenance Hurdles**—Up to this point in the development of the F-84, the sole aim was maximum performance from the airplane. Continuing changes in the fuel system, including the use of a different engine, were made to improve the high altitude characteristics of the fighter.

The various safety and armament feature changes were directed towards the creation of an effective combat article, but throughout the prototype XP-84, YP-84 and YP-84A, the F-84B and the F-84C, the accent was not only on performance improvements, but also the evolution of a workable airplane. But the lack of maintainability coupled with lack of experienced jet maintenance crews in the Air Force was beginning to take its toll in availability records.

The prototype engine installation, together with a variety of equipment features, was based largely on reports of Air Force experience with the J-33 engine in the Lockheed F-80, since this was the only jet craft in service at the time. Thus, what appeared to be the most desirable features in a jet fighter engine installation was based on Air Force experience on a totally different type turbojet engine.

Also, the jet tailpipe with a cooling shroud was an innovation on the XP-84 and a radical departure from the F-80.

For these reasons, the early F-84s were less than satisfactory maintenance-wise. Thus, the second, and most important, development phase—improvement in maintainability—got under way by the incorporation of hundreds of changes in the airplane, which produced the model F-84D.

▶ **Undercarriage Problem**—The major change that produced the new model dealt with the main landing gear. Republic engineers had borrowed a leaf from the P-47 Thunderbolt book in their design of the XP-84 prototype landing gear and used a shock-strut shrink system, which compresses the main gear strut during retraction so that the gear requires less room in the wing.

After any heavy airplane is airborne, the load is removed from the landing gear, causing the shock strut piston to extend to its full stroke, thereby adding several inches to the length of strut that must be accommodated within the wing. Republic engineers reasoned that this was wasted space.

On the earlier models of the F-84 this shrinking system was hydraulic, but proved a possible source of difficulty. As a result, a change was made to a purely mechanical system utilizing a simple tie rod between the piston and the wing structure.

This required changes in the wing structure, preventing interchangeability with earlier model Thunderjets, hence the next airplane was designated F-84D. But maintenance and serviceability changes that produced the new model were extensive.

▶ **Other Changes**—A new Air Force exterior lighting system was installed. Standard radio control panels were added. Lightweight fuel cells were substituted for the earlier cells, saving 120 lbs. per plane.

Armament section of the nose had previously been covered by a removable cowling but this was changed to a hinged cover to simplify access for servicing and maintenance procedures.

Engine fuel system was changed from kerosene to gasoline operation, requiring different fuel pumps, valves and nozzles. As a result of the added fire hazard from gasoline, the aft radio compartment was sealed and ventilated.

Pilot's seat ejection equipment, which had been installed on earlier models but not authorized for use, was certified fully operational after extensive development work on the weight of powder charge required, the addition of hand grips for the pilot, etc.

A "shoe horn" was added to the wing structure at the tire end of the shock strut to tighten the gear as it moved into the wing.

The pitot tube was moved from its former position atop the fin to a point on the duct inlet flow divider, thereby eliminating need for disconnect fittings for pitot total head pressure lines at the fuselage juncture, when changing engines.

▶ **Buffeting Encountered**—Ever-increasing flight and service testing had indicated severe buffeting of the entire airplane as the critical Mach number of the wing was exceeded. Extensive Republic testing was done in an attempt to isolate the source of this buffeting, including tests of canopy pressure distribution, modified wing fillets, wake survey ahead of the stabilizer, downwash measurements, etc.

A camera was installed to photograph the wing during high speed flight. These film records indicated considerable surface distortion, particularly on the lower surface of the wing aft of the rear spar.

In the F-84B and F-84C this skin was 0.072 but gage was increased to 0.081 in the F-84D, with a consequent increase in the buffet boundary of the airplane at design lift coefficient from Mach number 0.80 to 0.82, or an increase of 15 mph. at sea level under standard conditions.

Skin thickness between spars also was increased from 0.051 to 0.064 to distribute this added load.

As the F-84D continued in production, development changes accompanied each production group of airplanes.

A canopy remover was added to simplify the removal of the canopy. Alcohol deicing of the fuel system was installed to improve winterization characteristics.

▶ **Bomb Rack**—The early model bomb rack extended approximately 4 in. from the lower surface of the wing, about 12 in. outboard of the root. The installation retracted fully after the bombs had been dropped. Preliminary tests with bombs installed on this rack showed that the airplane required "noseup" trim. Consequently, when the bombs were released the airplane nose pitched up.

Tests were carried out with a variety of rack fairings and modifications until a new design extending 11 in. below the wing surface was developed, giving a minimum trim change upon release of the bombs. The pylons themselves, however, cost the airplane about 25 mph. in speed in the case of the 11 in. pylon and about 35 mph. for a 14 in. pylon.

As a result, the pylons were made jettisonable so that maximum airplane speed would be available after the low-level bombing run.

▶**Tip Tank Data**—To achieve the long range specified by the Air Force for the prototype XP-84 airplane, tip tanks were used. These were located at the tip in the plane of the wing to obtain maximum end-plate effect, thereby reducing induced drag and consequently increasing range.

Tests on earlier models had shown this location satisfactory without any pronounced effect on airplane stability or control. But as experience was gained in high-speed maneuvers with tip tanks, obvious control difficulties began to appear.

Data showed that at very high indicated speeds, whereas without the tanks the stick force gradient was constant up to about 6G, with the tanks installed the stick force gradient peaked at between 4 and 5G and dropped off rapidly at higher G loads. This peak was actually lower with the tanks empty at high speed than with them full, in direct contrast to earlier expetience.

A series of accidents throughout the country, one of them fatal, resulted in temporary grounding.

There followed a series of conferences at which not only Republic, AMC and NACA engineers were present but engineers from all of the nation's aircraft companies with experience on jet aircraft.

Literally hundreds of possible explanations of the difficulty were advanced and rejected during the day and night sessions, but the difficulties still remained a mystery. Certainly at this point the whole history of the Thunderjet was at stake. C. E. Pappas, Republic Chief of Aerodynamics, after poring over the minutes of the meetings, came up with a solution astonishingly simple in application but one that required extraordinary insight and acumen to decipher from the maze of possibilities.

▶**Tank Problem Solution**—The difficulty lay in some aerodynamic phenomena associated with the tip tanks. A series of tests was conducted to obtain comprehensive data on the effect of these devices.

Measurements were made of the variation of tank lift coefficient with wing root angle of attack. This was found to vary linearly at the high speeds which were under investigation.

The same variation was found to exist for the tank pitching moment coefficient with wing root angle of attack so that the tanks caused a 2¼ percent forward movement of the neutral point at Mach numbers below approx. 0.70, thereby isolating this tank moment as accountable for the bulk of the stability change.

But at speeds in excess of Mach 0.70, presence of the tanks caused a positive twist of the wing tip as the load factor increased. Pappas conceived the idea of adding a fin to the tail of the tank to improve the stability characteristics of the airplane. Flight tests immediately proved that not only did these fins increase stick force gradients but also eliminated the peaking of the gradient at high speeds.

With these small, triangular fins mounted on the outboard side of the tank, the F-84 can be flown at speeds as high as that of the airplane without tip tanks installed.

▶**F-84E's Range**—With completion of Air Force acceptance tests on the new, powerful, Allison J-35-A-17 engine of 5200 lb. thrust, Republic engineers created the F-84E model, currently in production.

This additional power provides substantially increased speed, rate-of-climb and ceiling. And additional fuel capacity, both internally and in larger tip tanks, gives the new Thunderjet a radius-of-action of more than 850 mi., comparable to many World War II piston-engine fighters.

Empty weight of the new model is only 1/10 more, and the gross weight (with useful load) is ¼ more than the prototype XP-84 first flown 3½ yr. ago.

Maximum speed is substantially increased and the service ceiling is above that of any bomber now in operational service. But the service and maintenance modifications continued, with 180 access doors, retractable battery lift, quick-disconnect on all electrical cables, elimination of large electrical terminals, automatic disconnect on fuel vent system at fuselage splice, additional fire-fighting doors, improved brakes, and air conditioning system—the list is extensive.

▶**Late-Model Improvements**—The wing structure has been further strengthened by the addition of nose ribs and heavier spars, so that the plane now has an ultimate load factor of 14 in contrast to the original 11 (this load factor is well above the 7-8G limit imposed by the Air Force on its service pilot).

Cockpit is longer, roomier, and incorporates the basic features of the Air Force-Navy "standard cockpit".

JATO racks are retractable and the F-84E can release its bottles at a considerably higher speed than any other Air Force fighter.

The new model incorporates special radar gear and gun laying and firing equipment that enormously enhances its effectiveness as a high-altitude penetration fighter.

It is difficult to give more than the broad, major items that have been incorporated in the development of the Thunderjet from its fast but unserviceable prototype to its current production and operational model—not only a fast, high-flying, long-ranging tactical weapon but one that is conveniently serviced and maintained in a high state of readiness for combat.

Bringing the craft through this development has not been an easy or cheap task, for a detailed list of changes of only the radio equipment, for example, would be extensive.

But the F-84 illustrates the long and difficult process demanded of designers, engineers, researchers, pilots, mechanics, shop workers, executives, and military personnel in the "evolution of a more effective article."

Significantly, the Air Force now rates maintainability of the Thunderjet as 50 percent of its evaluation, a full partnership with the remaining 50 percent for performance.

Original design of the airplane created the 50 percent for performance, but only 3½ yr. of hard work, sacrifice and tenacity created the 50 percent for utility.

Forced-Feed Fueling

An aircraft fueling system which would cut 75 percent from the time required to service multi-engine planes is currently under development at the Boeing Airplane Co., Seattle, Wash.

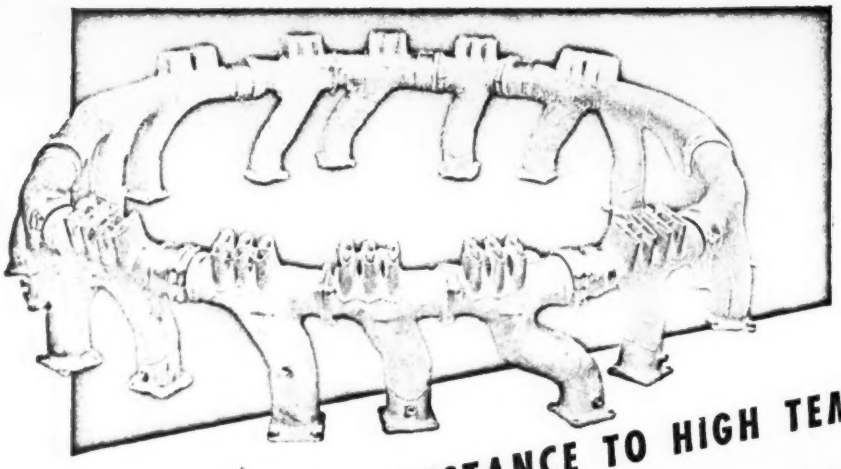
The new system would permit a B-50 Superfortress to be filled by a single truck from one inlet point in slightly more than 15 min. according to G. W. Newton, Boeing powerplant unit chief. It now takes two trucks more than one hour to refuel this craft from six separate points.

The development hinges on forced feeding. It is aimed at combining the ultimate value of the single-point system with a far greater refueling speed.

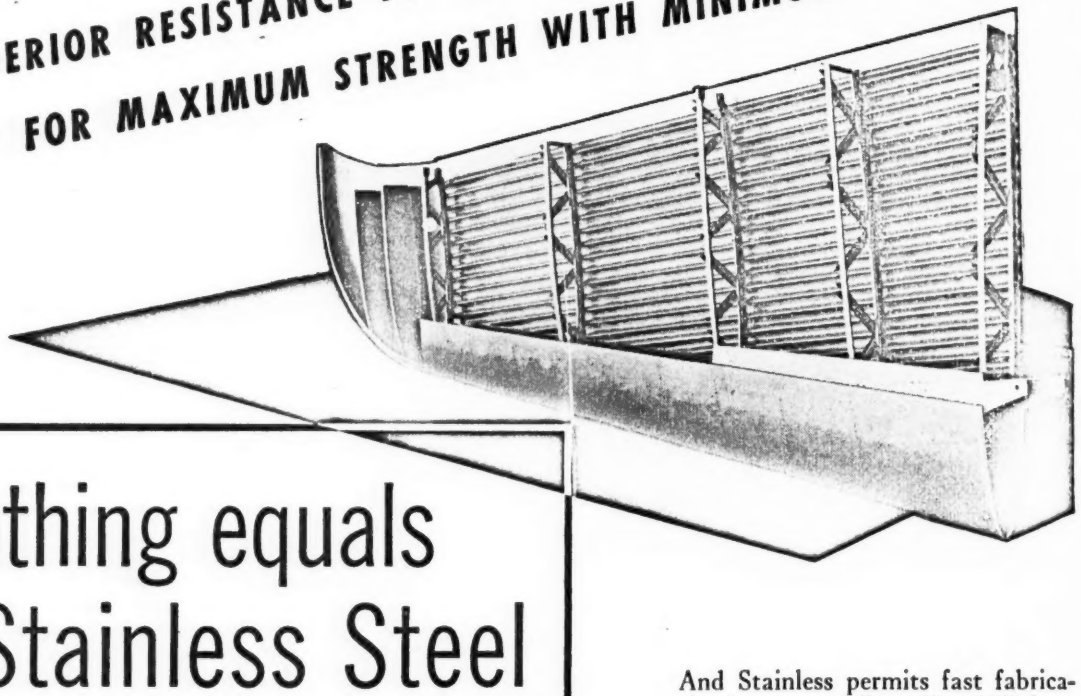
Under present conditions, feeding from several trucks simultaneously offers greater efficiency in total fueling time than the single-point system.

A mockup using B-50 fuel parts has been set up near the Boeing plant to determine how the high-capacity system will work. Newton reports that it continuously has recirculated 2000 gal. of high-test gasoline at the desired rate of flow without serious malfunction.

The development may prove to be of great value to bomber operations, where speed in ground servicing is critical.



- FOR SUPERIOR RESISTANCE TO HIGH TEMPERATURES
- FOR MAXIMUM STRENGTH WITH MINIMUM WEIGHT



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UNITED STATES STEEL

PRODUCTION

Meaning of Minimum Wage Fight

Increase in standard, industry says, could add $40 million to production cost and cut military deliveries.

The aviation manufacturing industry tomorrow will fire another shot in its battle to stave off government wage action that could shape the manufacturers' competitive course for years to come.

As a follow-up to the hearings recently held in Washington by the Department of Labor on redetermination of a minimum wage in the industry (AVIATION WEEK, Aug. 8), the Aircraft Industries Assn. will submit a supplemental brief taking issue with the statistical approach of the Department of Labor, and also attempting to bat down union arguments for a $1.15 minimum wage.

▶ **Long-Range Effect**—Present minimum wage standard in the industry is 50 cents an hour. AIA doesn't think this is the time to change, but if overruled by the Labor Department AIA thinks the new rate should be between 80 and 95 cents an hour. All sides agree few workers now get less than 95 cents, so on the surface the argument looks academic. But it isn't.

A raise in the minimum wage standard now, according to industry experts, ultimately could:

- **Add $40 million** annually to the industry's wage costs; or
- **Mean firing 10,000** present industry employes; or
- **Cut military equipment** deliveries.
- **Drive some companies out** of areonautical production. These companies are extremely important military suppliers, but their aviation business is only a small part of their total work. They say that if the unions insist the aircraft minimum wage be applied company-wide, their commercial products would be so expensive they would not be competitive.

Why this would happen is complicated, but it is the nub of the industry's case. Depending upon whose figures you use, you can state (as the unions do) that less than 10 percent of aircraft workers make less than $1.15 an hour, so any pay raises stemming from an increase of the standard wouldn't amount to much. But AIA claims that 77 percent of all the industry's common laborers would have to get a raise.

▶ **Differential Pitfall**—The unions, the government and AIA all know you can't raise the wages of only part of the industry's employes. The pitfall is "differential":

- **An employe's pride** in keeping the existing differential between his pay and that of someone with less seniority and less responsible job.
- **Union contracts** which in most cases specify, through job classification ratings, differentials in pay.

The second reason is the more relevant. It means that if a minimum wage of more than 95 cents is selected, practically all wages will have to go up. And the new rates will be written in union contracts.

▶ **Permanent Raises**—Those contracts, it is pointed out by the industry, will be effective no matter who the customer is. Right now, about 80 percent of the industry's output goes to the military. Actually, any minimum wage picked by the Labor Department is effective only for workers employed on government orders. But 77 percent of those working on government business are unionized. And once the pay raises are in union contracts, they apply even to work done for civil customers.

The industry says: Suppose military business drops off? Manufacturers then will have to live off commercial business. But the prices of both personal and transport aircraft already are driving prospective customers away. That's why AIA doesn't concede that the minimum should be raised now.

▶ **Artificial Economy**—With a military backlog of about $2.5 billion, AIA's argument runs, the industry is living in an artificial economy. It reminds the Labor Department that the present minimum, set in 1938, was not disturbed during the war because the government took the view that conditions then were artificial.

The industry also argues with the approach of both the unions and the Labor Department. The Walsh-Healey Act requires the Secretary of Labor to "determine" the prevailing minimum wage (so a company can't get a government contract by paying sub-minimum wages to keep costs down), but doesn't tell him how. The unions argue—and some in the Labor Department agree—that the prevailing minimum should be based on the overall distribution of wages, industry-wide.

The industry says the prevailing minimum should be based on the entrance rates for unskilled workers. So, you get two principal sets of figures.

▶ **BLS vs. AIA**—The Bureau of Labor Statistics calculates that, industry-wide, 9.9 percent of workers get less than $1.15 an hour. But, says AIA, these figures include skilled and semi-skilled workers, and unskilled workers whose pay has advanced through upgrading and seniority.

AIA submits other sets of figures winnowing down the employes falling within the "minimum" wage to only the unskilled, and based on entrance rates. These figures indicate that 95.9 percent of workers are in jobs with entrance rates less than $1.15 an hour, and that 2.7 percent have minimum contract rates less than 80 cents an hour. Therefore says the industry, the proper prevailing minimum wage should be in the 80-95 cent bracket.

PRODUCTION BRIEFING

Boeing Airplane Co. delivered its twentieth Stratocruiser to Northwest Airlines, the fourth for the carrier. Previously, 13 had been delivered to Pan American Airways and two to American Overseas Airlines. Still under construction are 36 Stratocruisers for delivery to NWA, PAA, AOA, United Air Lines and British Overseas Airways Corp. USAF took delivery of its first C-97A Stratofreighter.

▶ **Emigh Trojan Co.**, headed by Harold E. Emigh, has acquired assets of Emigh Aircraft Co., and announces moving the plant to Douglas Bisbee Airport, Bisbee, Ariz., from former Norwalk, Calif., location. Plans are to produce and market 85- and 90-hp. all-metal two-place Emigh Trojan airplanes, 31 of which were delivered last fall for a service test and market survey.

▶ **Sperry Gyroscope Co.**, received USAF orders for more than 2800 vertical gyros and orders from Wright-Patterson AFB for 70 directional gyros and 293 Gyrosyn compasses. Recent Navy contracts to Sperry include orders for 300 and 174 gyro aircraft instruments from the Navy Bureau of Aeronautics and the Navy Aviation Supply Office, and another contract for 1337 gyro-horizon aircraft instruments.

▶ **Chance Vought Aircraft division,** United Aircraft Corp., awarded a contract to Texas Engineering & Manufacturing Co. to swage and magnaflux 243 engine mount tubes of chrome moly steel.

Latest Air Force Bid Awards

Air Materiel Command procurement Division makes available to AVIATION WEEK the latest bid awards, shown on this page. Requests for further information should be addressed to Contracting Officer, ACM, Wright-Patterson AFB, Dayton, Ohio, attention: MCPPSX72.

ABSTRACTS

For offset printing of government publications (49-2235):
Companies sharing—Laurel Process Co., Inc., New York, on a bid of $400,000; Mendle Printing Co., St. Louis, on a bid of $350,000; Universal Printing Co., St. Louis, on a bid of $250,000; Ross-Gould Co., St. Louis, on a bid of $200,000; Emerson Press, Inc., Pittsburgh, on a bid of $400,000; Success Printing & Lithographing Co., Inc., Indianapolis, on a bid of $20,000; William B. Burford Printing Co., Indianapolis, on a bid of $250,000; Central Press, Inc., Marion, Ind., on a bid of $40,000; Keller-Crescent Co., Evansville, on a bid of $200,000; Marshall-White Press, Chicago, on a bid of $400,000; Republican Press, Hamilton, O., on a bid of $100,000; Otterbein Press, Dayton, on a bid of $200,000; Copifyer Lithograph Corp., Cleveland, on a bid of $400,000, and Gray Printing Co., Fostoria, O., on a bid of $100,000.

For tachometer testers (49-2141):
Akeley Camera & Instrument Corp., New York, on a bid of $4845.

For 79 bench type lathes (49-2210):
South Bend Lathe Works, South Bend, on a bid of $84,462.06.

For typesetting services (49-2234):
Companies sharing—Birmingham Eccentric, Birmingham, Mich., on a bid of $50,000; Detroit Typesetting Co., Detroit, on a bid of $95,000; Michigan Typesetting Co., Detroit, on a bid of $95,000; Laurel Process Co., Inc., New York, on a bid of $95,000; Monsen-Chicago, Inc., Chicago, on a bid of $95,000; American Typesetting Corp., Chicago, on a bid of $95,000; Chicago Composition, Inc., Chicago, on a bid of $95,000; Probert Typesetting Co., Dayton, on a bid of $95,000; Dayton Linotyping Co., Dayton, on a bid of $75,000; J. W. Ford Co., Cincinnati, on a bid of $95,000; Westerville Press, Westerville, O., on a bid of $50,000; Superior Typesetting Co., St. Louis, on a bid of $95,000, and Craftsman Type, Inc., Dayton, on a bid of $25,000.

For 1724 frames, glass, knob, etc. (49-2491):
Bowser, Inc., Fort Wayne, Ind., on a bid of $5165.76.

For buffer & polisher (49-2071):
United States Electrical Tool Co., Cincinnati, on a bid of $22,656.

For 118 stand & level assemblies (49-2142).
Burg Tool Mfg. Co., Los Angeles, on a bid of $4425.

For 37 portable arc welders (49-2161):
York Supply Co., Dayton, on a bid of $37,786.

For film (49-2444):
Companies sharing—Eastman Kodak Co., Rochester, on a bid of $24,184.35; Anken Chemical & Film Corp., Newton, N. J., on a bid of $6198.40, and General Aniline & Film Corp., Ansco Div., Binghamton, N. Y., on a bid of $22,629.31.

For tester assemblies (49-2255):
Companies sharing—Charles Englehard Inc., East Newark, N. J., on a bid of $5170.49; Schaffer Air Industries Inc., Jamaica, N. Y., on a bid of $2590.20, and Detroit Testing Machine Co., Detroit, on a bid of $3894.66.

For trailer assemblies (50-10):
Palmer Manufacturing Co., Cleveland, on a bid of $72,980.80.

For indicator assemblies (49-2474):
Companies sharing—Lewis Engineering Co., Naugatuck, Conn., on a bid of $13,602.02, and Thomas A. Edison, Inc., Instrument Div., West Orange, N. J., on a bid of $3337.64.

For transmitters (50-4):
Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, on a bid of $113,932.56.

For 4948 pairs shoes (49-2244):
Companies sharing—Bristol Mfg. Corp., Bristol, R. I., on a bid of $10,825, and Hood Rubber Co., Watertown, Mass., on a bid of $37,391.12.

For indicators (49-2412):
Kollsman Instrument Div. of Square D Co., Elmhurst, N. Y., on a bid of $225,463.01.

For wrench, reamer, etc (49-2105):
Companies sharing—Aircraft Mechanics, Inc., Colorado Springs, on a bid of $3983; Pan-American Tool & Machine Corp., Dayton, on a bid of $340; Stevens Walden, Inc., Worcester, on a bid of $490, and Acromatic Tool Co., Detroit, on a bid of $3850.50.

For cable, hoist & windlass assemblies (49-2281):
Precision Aviation Products, Inc., Buffalo, on a bid of $40,536.54.

For generator control relay switches (49-2502):
Hartman Electrical Mfg. Co., Mansfield, O., on a bid of $24,497.81.

For 240 cover assemblies (49-2505):
Technicraft Corp., Kansas City, Mo., on a bid of $6757.39.

For adapters, bushing, and cap (49-2129):
Companies sharing—Irvin W. Masters, Inc., Burbank, on a bid of $767.50; Aircraft Fitting Co., Cleveland, on a bid of $8645; Sanford Aircraft, Inc., Inglewood, Calif., on a bid of $1374.20; Weatherhead Co., Cleveland, on a bid of $15,063.28; Aircraft Hardware Mfg. Co., Inc., Bronx, N. Y., on a bid of $779.85; Deutsch Co., Los Angeles, on a bid of $17,275.45; V. L. Graf Co., New Baltimore, Michigan, on a bid of $4320.35; Air Associates, Inc., Teterboro, on a bid of $992.15; Aeroquip Corp., Jackson, Mich., on a bid of $30,729.60; Lincoln Metal Products, Co., New York, on a bid of $1044.25; and Dole Valve Co., Chicago, on a bid of $646.60.

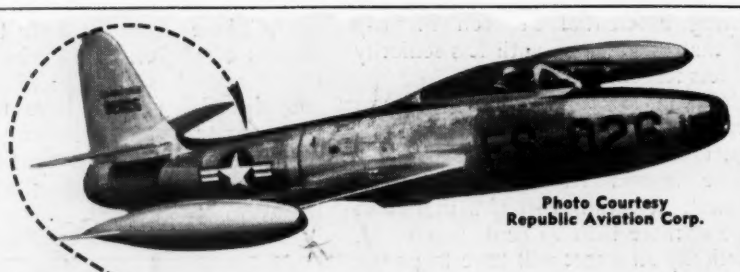
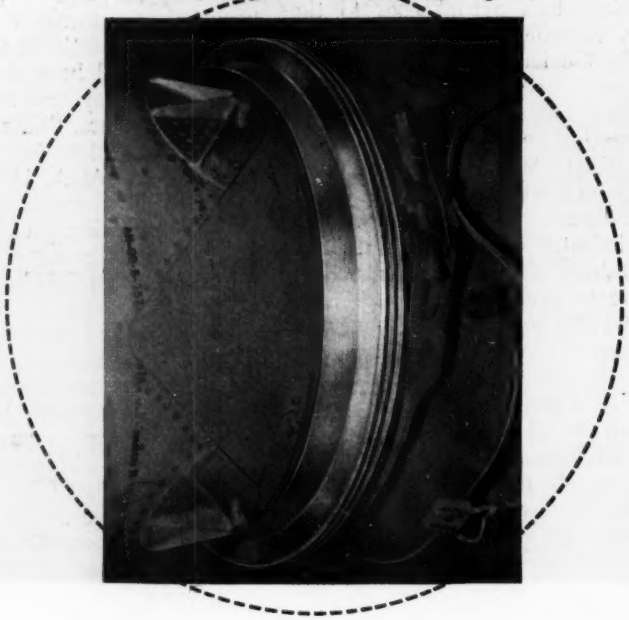


Photo Courtesy
Republic Aviation Corp.

HOLDING THE THUNDERJET'S *Breath!*



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on the Toughest Sanding Jobs with this *Dependable* Combination

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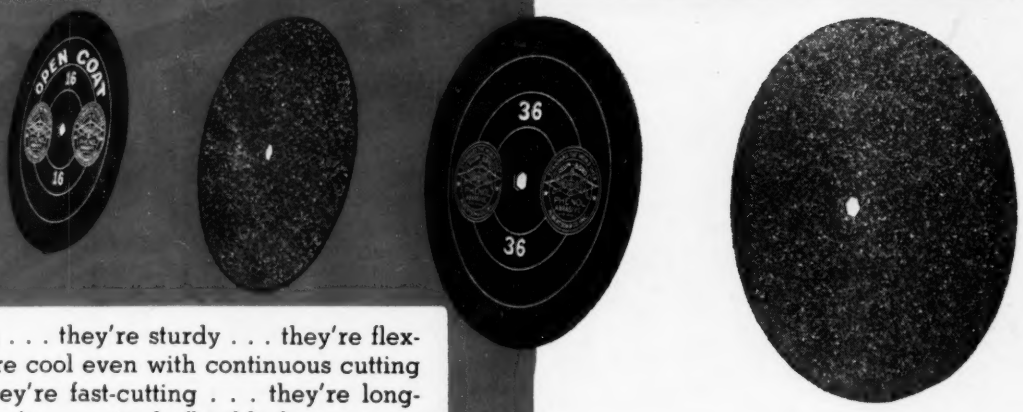

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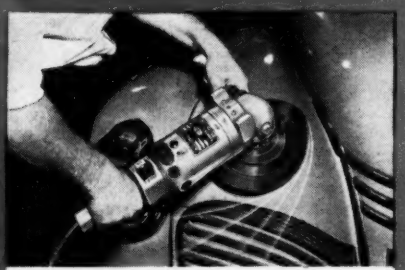
Ball-bearing construction, heat treated alloy steel gears, permanent lubrication. Cyclone fan for increased ventilation and patented tool spindle lock for changing discs. 3 Models: No. 1250—9" High Speed Heavy Duty; No. 1267—7" High Speed Heavy Duty and No. 1265—7" Special.

No. 1267—7" High Speed and No. 1265—7" Special. Same design and specifications except load speed.



No. 1250—9" In Action High Speed—Heavy Duty.

Sold only through Authorized SIOUX Distributors

STANDARD THE WORLD OVER

ALBERTSON & CO., INC. SIOUX CITY, IOWA, U. S. A.

FABRIC CLINIC: Rejuvenated aileron is compared with recovered one by Harry Mitchell, General Aircraft Supply Corp. vice president; William Bagley, Titanine sales engineer; Martin Uhlik, crew chief; Larry Zygmunt, GASC president; and Charles Rennwald, maintenance superintendent.

New Life for Fabric Coverings

Synthetic enamel finish as replacement for 'aircraft dope' promises greater durability and lower cost.

A new method of aircraft refinishing using synthetic enamels instead of the commonly used "aircraft dope" may bring new life to the fabric-covered light airplane market by reducing costs of refinishing, one of the present expense bugaboos of owners of fabric-covered airplanes.

Major finishing manufacturers have not completed wear tests on the life of enamel-finished fabric and it is still too early to accept the synthetic enamel without reservations as an aircraft fabric finish. But favorable reports are being heard from exposure-panel tests made in Florida under rigorous conditions, and from the "endurance test" currently being made by an enamel-finished Aeronca plane.

▶ **Reduced Cost**—Possibility that cost of refinishing may be reduced as much as 50 percent by the enamel method is seen by some engineers.

Advantage of such a cost reduction in the closely-competitive light airplane market would give fabric-covered airplanes a firmer place in the competition. Much of the ground lost by fabric-covered craft in the overall market since the war has been due to the high cost of refinishing fabric, to make it competitive with the relatively longer life of metal skins.

▶ **Clinic Endorsement**—First open endorsement of the synthetic enamel finish for fabric aroused considerable fixed-base operator interest and controversy at the recent clinic held at Detroit City Airport, for more than 100 dealers and distributors in the three-state distribution area served by General Aircraft Supply Corp.

William Bagley, Titanine, Inc., sales engineer with approximately 30 years experience in aircraft finishing techniques, gave operators with dope shops something else to think about.

▶ **Hot-Dope Method**—He predicted the hot-doping method will dominate the future (conventional) refinishing of fabric-covered aircraft, as well as their original construction.

Bagley, who conducted the clinic, reported that several new dope-heating devices, readily adaptable to the dope shop of a fixed base operation, are now being prepared for the market. Equipment cost is estimated at around $500. By pre-heating the dope, a controlled viscosity can be maintained which permits a more accurate control of flow from the dope gun. Temperature of around 165 degrees is used for the hot-dope method as compared to an ideal temperature of 70 degrees for cold dope.

▶ **Controversy Starts**—Bagley's advocacy of hot dope raised considerable controversy at the clinic with many of the operators supporting the older cold-dope method commonly still in use in refinish operations.

Other advantages of the hot-dope method cited by the Titanine representative include a virtual elimination of the need for thinner, and greatly reduced "blushing or blistering." Net result is a saving of considerable labor as well as improved finishes. He predicted that savings effected by using the pre-heat method would pay for the additional equipment in a short time.

▶ **Wet Fabric**—Bagley also warned against the practice of doping wet fabric, pointing out that fabric which has been water-shrunk should be allowed to dry thoroughly before dope application. A wet surface application is cause of ringworming and cracking, because the dope never established a firm bond on the fabric, he warned.

Clinic included a number of demonstrations of fabric-refinishing techniques, using service specimens taken from shops at the airport. Most spectacular was the renovation of the covering of a three-year old aileron which was badly checked and ringwormed. It was submitted by a Detroit fleet operator. After being worked over with dope softener and rejuvenator, it was decided that the aileron and its twin could be refinished and put back into service without re-covering.

Plans Record Tries On World Flight

Jack Brazil, Britton, Okla., pilot, who hopes to fly a four-place all metal Johnson Bullet plane around the world, wants to set a new lightplane distance record in the first leg of his projected flight from Oklahoma City to Rome, Italy, (5500 miles) and to break this record in the last leg of his flight, 6300 miles non-stop from Tokyo to Oklahoma City.

Rest of the flight itinerary includes hops from Rome to Ankara, Turkey, to Teheran, Iran, to Karachi and Calcutta, India, to Hongkong and Shanghai, China, and then to Tokyo.

The plane is powered by a 185-hp. Continental engine.

five fabric features by Bridgeport

Bridgeport Upholstery Fabrics are 100% wool, woven smooth as chamois to avoid clinging to clothes.

Bridgeport Upholstery Fabrics are certified flameproof by C.A.A.—they do not support combustion.

Bridgeport Upholstery Fabrics are tightly woven to resist dirt and stains. They can be brushed bright in a moment.

Bridgeport Upholstery Fabrics are so constructed that they can be installed up to 20% quicker.

Bridgeport Upholstery Fabrics are available in many colors and weaves to suit your plane interiors. Write for sample swatches and complete details.

Specify Bridgeport for Seats, Backs, Sidewalls, and Headlinings.

Bridgeport FABRICS, INC.

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BRIEFING FOR DEALERS & DISTRIBUTORS

LIGHTPLANE FUEL—Shell Oil Co. has announced a new 80/87 octane aviation gasoline designed to provide light planes with a controlled takeoff rating as well as standard cruise rating. Shell Aviation manager J. S. Harris says the fuel can be used in some engines in the 450 hp. class which previously required 91/98 octane gasoline, as well as in smaller engines. The 80/87 fuel will be sold by Shell dealers at the former 80 octane price.

HYDRAULIC CRUISE CONTROL—Hydraulic actuation has been incorporated in a new version of the Strato-cruise control for Aeromatic propellers. It is being installed along with an F200 Aeromatic propeller on the 145 hp. TEMCO TE-1A military type trainer. It is the first installation of the control-propeller combination on the Continental C-145 engine. CAA approval is being asked also for other installations of the hydraulic control on the 115 hp. Lycoming engine and the 150 hp. Franklin engine. Earlier versions of the control device (AVIATION WEEK, March 28) have been mechanically operated. The hydraulic arrangement was adopted for flange shaft installations to simplify installation and servicing problems. The control makes it possible for the pilot to adjust pitch to maintain rated rpm. up to the service ceiling of the plane. At the same time the counter-weighted propeller retains its automatic pitch-varying characteristics, subject to the over-riding control.

NATIONAL FLIGHT REORGANIZES—National Flight System has announced consolidation of its national headquarters at 690 Market Street, San Francisco, and selection of new officers. Robert F. Gunnell, general manager of the corporation for the past year succeeds Dick Powell, film star, as president. Frank J. Demeter, western regional director, succeeds Robert Pike, as vice president.

SELLING AMBULANCE PLANE SERVICE—Operators of airplanes equipped for ambulance service can takes a sales tip from Dietrich Ambulance Service, Detroit, which recently bought a Beech Bonanza, fitted as a flying ambulance and painted in yellow and silver to correspond to the company's fleet of 30 ambulance automobiles. To acquaint medical services in the Detroit area with the advantages of the new litter-equipped plane, the company is scheduling complimentary demonstration rides for any of the 2900 physicians in the Detroit area who wish to accept. The demonstration includes permitting the physician to ride on the litter to let him know how comfortable his patient would be in a similar flight.

REGLO DISTRIBUTORS—Regal Air Corp., New York, has announced appointment of the following new distributors for ReGlo, high gloss protective finish for aircraft metal, wood and fabric surfaces: Atlas Aviation Ltd., Ottawa, Canada; General Aviation Supply Co., Inc., St. Louis; Air Associates branches in Chicago, Dallas and Burbank, and Standard Products, Inc. (formerly S. A. Long Aviation division), Wichita.

EMIGH TROJAN PRICES—Prices of $3925 and $3195 respectively have been announced for the 90 and 85 hp. versions of the two-place all-metal low-wing Emigh Trojan airplane, which is going into production at Bisbee, Ariz. Harold E. Emigh, designer and president of the Emigh Trojan Co., which has acquired assets of the Emigh Aircraft Co., of Norwalk, Calif., reports that service tests and public reaction to 31 models of the 85 hp. version which were delivered last fall to various areas, have been very favorable. The fixed tricycle-gear plane will have the following standard equipment at the prices quoted: Continental 85 or 90 hp. engine, metal propeller, Hamlin and Wilson mufflers, Willard battery, starter and generator, Auto Pulse emergency fuel pump, Scott parking brake, and Kollsman and Stewart Warner instruments. Optional extra installations will include radios, lights, and a child's jump seat. **—ALEXANDER McSURELY**

Domestic Trunkline Operations

(First Half 1948 and 1949)

Carrier	Operating Profit 1949	Net Profit 1949	Operating Profit 1948	Rev. Pass.-Miles: (Add 000) 1949	1948
American	$4,002,966	$3,332,181	$(4,457,287)	728,009	572,175
Braniff	(11,490)	19,907	(448,581)	94,521	92,167
Capital	345,329	832,117	(1,065,484)	161,189	126,117
Chi. & So.	359,351	202,197	293,522	52,570	50,791
Colonial	58,777	38,039	(154,616)	22,624	16,601
Continental	(211,016)	(143,884)	(3,516)	30,235	27,113
Delta	518,499	328,297	764,029	110,140	91,592
Eastern	4,769,261	2,582,863	3,794,422	528,733	528,803
Inland	177,929	110,466	(11,342)	13,909	12,478
Mid-Cont.	243,605	148,400	(46,000)	48,245	44,335
National	1,000,000*	1,000,000*	(860,295)	89,346	37,127
Northeast	(104,247)	(119,304)	(793,065)	26,807	22,077
Northwest	(242,787)	(334,006)	(2,435,678)	173,563	151,941
TWA	(342,340)	(901,346)	(1,210,681)	446,883	410,376
United	17,626	(523,610)	(3,037,736)	593,224	516,300
Western	12,009	(70,529)	(910,941)	49,503	51,474
Totals	$10,593,472	$6,501,788	$(10,583,249)	3,169,501	2,751,467

* Estimated. Parentheses indicate deficit.

(CAA traffic figures. Scheduled operations only.)

Airline Earnings in Fast Climb

Carriers having best postwar year financially, while rails continue to slip. Feeder traffic gains big.

By Charles Adams

Highest peacetime earnings in the history of U. S. commercial air transportation appear within reach this year.

Although domestic traffic slipped moderately from the record level reached in June, profits continued to accumulate during the summer months. U. S.-flag international carriers also are doing more bookkeeping in black ink than at any time in the postwar period.

▶ **First Half Earnings**—Nearly complete reports for the first half of 1949 show that the 16 domestic trunklines had an operating profit of more than $10.5 million and a net profit of around $6.5 million. During the same 1948 period the domestic operating loss was $10,583,000.

In the first six months of last year 13 of the 16 domestic trunklines operated in the red. But in first-half 1949, 11 of the carriers were in the black. At least three more companies went over to the profit side of the ledger by the end of July.

▶ **July Reports**—Croil Hunter, Northwest Airlines president, reported his company had a system-wide net profit of $673,000 in July, down substantially from the $1,022,000 net earnings in June, but still far ahead of July last year. So, NWA finished the first seven months of this year with a $1,104,000 net profit covering both domestic and international operations.

Mid-Continent Airlines, which had a $148,400 net profit in first-half 1949, earned an additional $43,000 in July. In July of last year, MCA's net was only $18,000.

Northeast Airlines wiped out a first-half operating loss of $104,000 by earning $123,000 in July. At the end of the first seven months of last year, NEA was almost $800,000 in the red.

▶ **Traffic Gains**—While July and August traffic on a number of trunklines dipped 5 to 10 percent from the June peaks, some carriers resisted the downward trend. Capitalizing on its special summer excursion rates to Florida, National Airlines flew 8.7 percent more revenue passenger-miles in July than June.

Complete figures show that the 16 domestic trunklines during first-half 1949 flew 18 percent more passengers, 15 percent more passenger-miles, 41 percent more freight ton-miles and almost 19 percent more mail ton-miles than in the same period last year. Only traffic category countering the trend was express, which fell about 16 percent.

▶ **Rails Lose Ground**—As the air transport industry rolled up impressive gains, surface passenger business continued its postwar decline. During the first four months of 1949, first-class rail passenger-mileage (Pullman and parlor car) was down 8.6 percent from last year.

Airlines captured 35.4 percent of the total domestic first-class travel market in the first four months of this year, compared with 30.1 percent in the same 1948 period. During May and June airline revenue passenger-mileage soared to around 46 percent of the total domestic first-class travel market.

Rail coach passenger-mileage in the first four months of 1949 slumped 15.5 percent from 1948, and inter-city bus passenger-mileage was off 6.4 percent in the first quarter.

▶ **Overseas Business Improves**—U. S. overseas carriers shared in the airline traffic upswing. Most major international routes were money-makers during the first six to eight months of 1949.

TWA showed a $1,694,000 operating profit on its overseas services for the first half of this year, compared with a $2,484,000 deficit in the same 1948 period. American Overseas Airlines' $164,000 operating loss on June 30 was under last year's $795,000 deficit.

Chicago & Southern reported a $314,000 operating profit on its Latin American links in first-half 1949. Northwest's operating profit on its links to Alaska, Hawaii and the Orient was $781,000; United made $347,000 on its West Coast to Hawaii run; while Braniff had a $34,000 operating profit (but a $38,000 net loss) on its South American service. Colonial lost $119,000 on its routes to Bermuda.

▶ **PAA in Black**—Pan American Airways estimated it earned a $5,483,000 operating profit on its world-wide system during the first six months of 1949. But the earnings are contingent on the carrier's receipt of more than $13 million in mail pay above the sum actually taken in with existing temporary rates.

▶ **Feeder Progress**—With a few exceptions such as Pioneer Air Lines, Empire Air Lines and Southwest Airways, the domestic feeders failed to make money during the first six months of this year. But as a group they made impressive traffic gains over first-half 1948.

Feeder passenger business was up nearly 73 percent, freight 93 percent, express 70 percent and mail 66 percent. Average passenger load factor for the short-haul lines was 27.15 percent in first-half 1948 against 24.9 percent in the same period last year.

Auto Feathering

Study of Convair crash at Memphis indicates value of device.

American Airlines has given a clean bill of health to the single-engine takeoff performance of its Convair-Liners and to the automatic mechanism which feathered the right propeller of an AA Convair shortly before the ship made a crash landing at Memphis on June 22.

Although the official Civil Aeronautics Board report on the accident has not yet been issued, preliminary results of the investigation are significant in view of formal charges made against automatic propeller feathering devices last spring by the Air Line Pilots Assn. (AVIATION WEEK, May 9). ALPA President David L. Behncke at that time protested that the Civil Aeronautics Administrator's certification of the Convair-Liner, Martin 2-O-2 and Boeing Stratocruiser—all of which have the controversial mechanism—is a threat to air safety.

▶ **Climb Requirements**—The Civil Air Regulations provide that to meet specifications necessary for airworthiness certification a plane must be able to "climb out" notwithstanding engine failure at a critical point during takeoff. ALPA claims that if the automatic propeller feathering device failed the Convair, 2-O-2 and Stratocruiser would not meet this requirement. If CAA accepts ALPA's views, maximum payloads of the three transports might have to be reduced at some fields.

In the Memphis mishap, the Convair was loaded to 38,893 lb.—within the allowable limit—when it prepared to leave for Washington. With wing flaps extended 16 degrees, the aircraft attained an estimated airspeed of 120 mph. and became airborne after 2700 ft. But before the plane was more than 10 ft. off the ground, the right engine failed and the propeller automatically feathered.

The flight continued straight ahead, gaining altitude slowly and passing over the end of the runway at about 50 ft. The landing gear retracted after momentary hesitation, and the wing flaps were retracted a couple of degrees at a time.

▶ **Over the Line**—Big problem was to clear power transmission lines crossing the course of the flight 11,700 ft. from the start of the takeoff roll. The lines were between 90 and 126 ft. higher than the end of the runway.

In clearing the lines by about 10 to 20 ft., airspeed was sacrificed, dropping from 110 mph. to 105 mph. At that speed, the plane couldn't maintain altitude although the left engine continued to develop full takeoff power.

HANDY BALLAST

Pan Am master mechanic Asa Potter is shown above with the sand containers he devised from fire hose sections to solve a ballast problem in pilot training. Each container, made of two-foot sections of fire hose, weighs about 33 lb. when filled, and is much easier to lift than the 50-lb. sandbags on the stand. The bags leaked sand, but not the new containers. Wooden plugs seal the ends, and a rope loop in the plug makes a convenient handle. The hose containers also last much longer than ordinary sandbags.

The pilot made a shallow right turn and crash landed in a clearing. Several of the 41 passengers and crew of three suffered serious injuries, but there were no fatalities. The Convair was damaged extensively.

▶ **Fuel Flow Restricted**—Investigation showed that the primary cause of the accident probably was the failure of the right engine resulting from clogging of the impeller thrust plate oil passages, which, in turn, restricted fuel flow. Since the mishap, American has modified the impeller thrust plate on all engines of this type.

ALPA was concerned over the possibility that the right engine on the Convair involved in the Memphis accident was still developing sufficient power to help in takeoff at the time the automatic propeller feathering device was actuated. On this point the Convair pilot testified that actuation of the feathering mechanism definitely helped the plane clear the power lines.

During the accident hearing, American Airlines officials testified that in approximately 158,000 engine hours and 97,000 takeoffs with Convairs the automatic feathering unit had always worked when supposed to do so. The company said reworking of the device has eliminated a large part of the unwarranted feathering.

▶ **Tests Ordered**—The question still remained whether the Convair at Memphis should have been able to climb out with the right propeller feathered. Ground observers indicated that the plane's attitude was nose high from the time it became airborne until after it cleared the power lines.

To check the Convair's single-engine takeoff performance, American conducted tests with another plane at Memphis. The ship was loaded to 39,050 lb.—197 lb. more than the weight of the Convair that crashed.

▶ **Obstacle Cleared**—Two trial climbs were made with the left engine at takeoff power and the right engine feathered. Sixteen degrees of flap were used, and the climb was executed at 125 mph. In these and other tests (one of them made downwind), the Convair easily cleared the power line with an indicated rate of climb of about 300 feet per minute.

Consolidated Vultee also made some tests and reported that in its opinion the existing operations manual did not cover adequately the procedure with regard to flaps under single-engine takeoff conditions. The manufacturer emphasized that one-engine performance with the Convair-Liner is very susceptible to flap position and that the rate of climb can deteriorate very rapidly from the maximum if the airspeed is either increased or decreased.

▶ **ALPA Recommendations**—During the hearing on the accident, ALPA recommended that: 1. The "T" category should be rechecked against present operating procedures; and, in the case of temperature accountability, relative humidity should be included; 2. BMEP gauges should be installed; 3. Further tests should be conducted regarding flap operations during first and second segment of climbs.

Brazil Airline Sells out to REAL

(*McGraw-Hill World News*)

RIO DE JANEIRO—Another of Brazil's little airlines, NATAL, has dropped by the wayside in the post-war struggle in Brazilian commercial aviation.

NATAL, with its four converted C-47s and some good routes in the populous state of São Paulo, has sold out to REAL, which in three years' existence has grown into one of the country's top domestic lines.

REAL now has 20 Douglas DC-3s and C-47s. Its lines cover most of Brazil from Rio de Janeiro to the south, the country's most prosperous area.

In acquiring NATAL, the REAL company also added one flight daily between Rio de Janeiro and São Paulo, giving REAL nine such hops daily in each direction (the flight takes about an hour and a half).

REAL's progress was further shown

by official statistics on movement at the bustling São Paulo airport in July. REAL led all other companies in passengers transported to and from that field, with 16,829, and in number of takeoffs and landings, 1026.

Star Routes

Air Transport Assn. won a victory when the Senate Post Office and Civil Service Committee inserted what may be a crippling stipulation in legislation authorizing the Post Office to expand air star route service. Under it, scheduled airlines are granted "not less than 30 days" in which to protest the advertising of bids for a proposed air star route to the Civil Aeronautics Board. CAB would have authority to veto the route.

Some Post Office officials believe the procedure will hamstring its program. It expects to establish some 12 air star routes in mountainous areas and the Great Lakes region over the next year.

The House rejected the ATA-recommended stipulation, so it is now before a House-Senate conference committee for decision. House conferees are inclined to accept it, in order to expedite enactment of the legislation, and see whether scheduled airlines and CAB unwarrantedly use it to block new air star routes.

Three Unions Battle Over Flight Engineers

Organization of airline flight engineers has become a three-way union battle.

International Assn. of Machinists entered the picture recently when it signed an agreement with Northwest Airlines.

▶ **Other Unions in Field**—Air Line Pilots Assn. holds bargaining rights for American Airlines and United Air Lines flight engineers. Flight Engineers International Assn. represents engineers on American Overseas Airlines, TWA; Eastern Air Lines and Pan American Airways. ALPA and FEIA are both affiliated with the American Federation of Labor, while the IAM is an independent union.

IAM's agreement with Northwest automatically transfers flight mechanics into the flight engineer classification and raises the pay range to $400-$600 a month. Each mechanic receives full credit for previous seniority. Individual raises average $125 monthly.

▶ **Automatic Raises**—Domestic service calls for a minimum of $400 monthly with automatic raises guaranteed every six months until $550 is reached at the end of four years. Pay for foreign service begins at $450 monthly with automatic raises of $25 a month until $600 is reached.

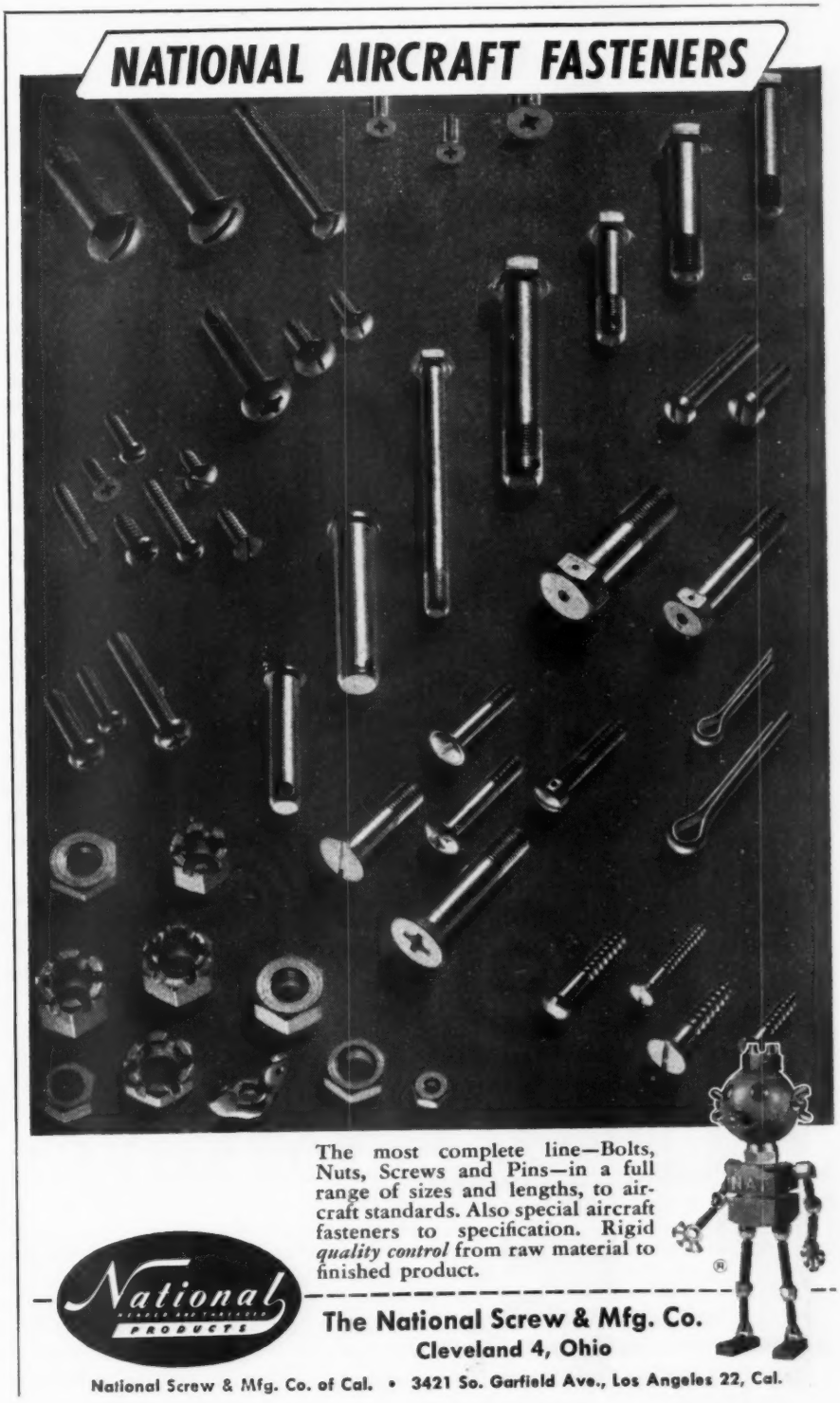
Resort and AAXICO Rejected on Tours

Resort Airlines, Pinehurst, N. C., and American Air Export and Import Co. (AAXICO), Miami, have lost their bids to conduct domestic all-expense escorted tours between various large cities and resort areas in the United States.

The Civil Aeronautics Board said it could not see where the applicants' proposals offered anything substantially new or different. "While facilities providing for escorted tours serve a useful public service, it has not been demonstrated satisfactorily that such purpose cannot be met by presently-certificated carriers and routes," the Board said.

(A year ago, the CAB examiner in the case recommended Resort Airlines for domestic routes as well as overseas routes.)

▶ **President Acts**—CAB originally considered the domestic "skycruise" applications in conjunction with the same carriers' requests for foreign and overseas tour authorizations. Last February, the Board submitted an opinion to


NATIONAL AIRCRAFT FASTENERS
The most complete line—Bolts, Nuts, Screws and Pins—in a full range of sizes and lengths, to aircraft standards. Also special aircraft fasteners to specification. Rigid *quality control* from raw material to finished product.
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World's most reordered four-engined transport

The internationally-famous Lockheed Constellation is the world's most reordered four-engined transport. In the past year alone, 44 of these luxury airliners were purchased by seven major world airlines.

Trans World Airline bought an additional 20, boosting its fleet of Constellations to 55, the largest standardized four-engined fleet in the world. It was TWA's sixth order for Constellations. Eastern Air Lines bought seven more—its third purchase. Air France ordered an additional six—its fifth order. KLM Royal Dutch Airlines bought four new Constellations, the fifth time it has purchased this 320-mile-an-hour transport. The Union of South Africa bought a fleet of four for the South African Airways, newest member of the Constellation family. Air India International bought two, and Qantas Empire Airways, which flies the long Sydney, Australia, to London run, ordered one more.

It is this constant world-wide demand for the Constellation that has kept Lockheed's Constellation production line in continuous operation. This production line has never been shut down.

This *tried and proven* luxury transport has now flown 5,000 million passenger miles, including more than 15,000 Atlantic crossings. It is flown by 12 major world airlines.

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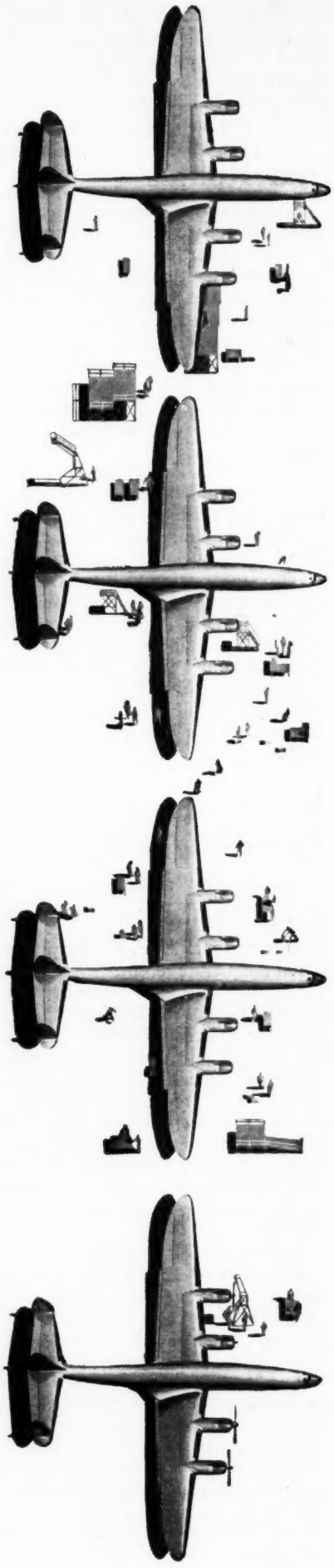
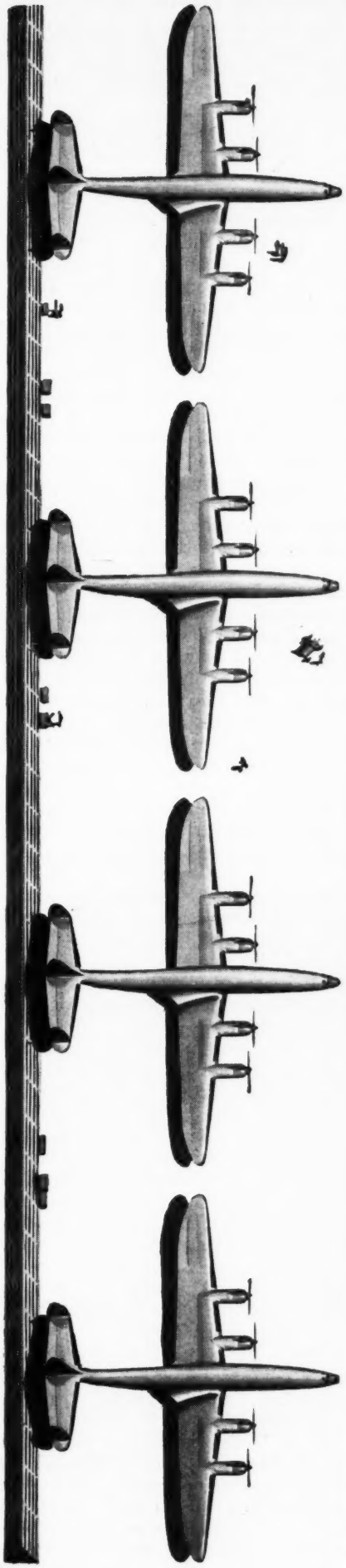




President Truman denying all the applications.

But the President, acting in accorance with his statutory authority, advised CAB that in the interest of national security it was desirable to certificate Resort Airlines for foreign and overseas services. Accordingly, the Board last spring authorized RAL to conduct all-expense air tours between the U. S., Mexico, the Caribbean area, South America and Canada for five years (AVIATION WEEK, June 20).

In view of Resort's certification internationally by Presidential request, CAB reopened the case to reconsider the bids of AAXICO and RAL for domestic services.

► **Present Service Cited**—The Board's latest opinion states that currently-certificated airlines have provided all-expense air tours in conjunction with travel agencies since before the war. Travel agencies (through tour operators) merchandise and sell the packaged vacations, with the airlines performing the required transportation.

To induce travel agencies to promote all-expense tours, the certificated airlines have adopted a resolution providing for payment of a 10 percent commission for the sale of this type transportation, compared with the 5 percent commission on regular commercial travel. CAB cited United Air Lines, Eastern Air Lines, TWA, Delta Air Lines and Capital Airlines as being among the certificated carriers particularly active in the domestic air cruise field.

SWA Re-Enters Overhaul Field

Southwest Airways Co., South San Francisco, Calif., is again looking for outside overhaul work. The carrier withdrew from aircraft maintenance business two- and a-half years ago to concentrate on establishing its feeder operation on the West Coast.

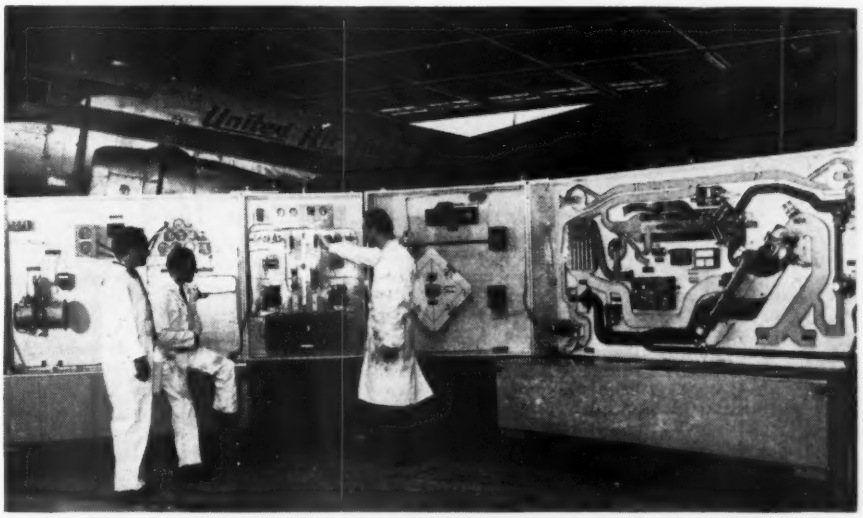
Overhaul shops have been moved from Phoenix, Ariz., to South San Francisco and are equipped to overhaul engines, major and minor aircraft components, accessories, instruments, and radio equipment. SWA can also handle modification, conversion and general maintenance of transport type aircraft.

Prior to certification as a carrier, Southwest had been in the aircraft overhaul and maintenance business for about ten years. At present, SWA's shops are handling its own equipment, that of several other organizations, and overhauling instruments under a contract with the Navy.

Air Parcels Pay Off

Domestic air parcel post, which was one year old Sept. 1, has achieved a popularity far beyond that originally anticipated.

Post Office officials report that as of Aug. 31 the domestic airlines had carried nearly 7 million parcels weighing 14 million pounds and producing about $9 million revenue for the government. Early estimates had placed the probable



UNITED'S PORTABLE SCHOOLHOUSE

A mobile training unit with textbooks as big as billiard tables is being used by United Air Lines to keep mechanics and flight personnel proficient in DC-6 operations. The huge "textbooks" consist of four cabinets containing working models—or operating mockups—of DC-6 electro-mechanical systems. Each cabinet is six feet high, and their combined weight is 4500 lb. A trailer truck hauls them to training sessions at major stations along United's system. The panel indicated above by the UAL instructor, who accompanies the mobile training unit, simulates the DC-6 generator control system. Two other mockups in the same cabinet illustrate airfoil anti-icing and cabin pressurizing systems. Cabinet at right holds heating and air conditioning system mockup.

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FLIGHT RESEARCH ENGINEERING CORP.

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first-year volume at 4.7 million parcels.

While representing less than 1 percent of the total pieces of mail handled by the Post Office, air parcel post will account for about 11 percent of the domestic air mail revenue accruing to the department.

Subsidy Control

Commerce Department suggests it take over granting of payments.

Commerce Department is bidding for control of government subsidiary and promotional policies on all forms of transportation.

Under the Hoover Commission's reorganization plan, Commerce Department would be required to work out over-all route patterns and balanced promotional programs for land, sea, and air transportation.

The department would testify before the regulatory agencies—Interstate Commerce Commission, Maritime Commission, Civil Aeronautics Board—as to whether specific cases up for action conformed to the over-all program. The department's recommendations on rates, routes, subsidies and other matters, however, would not be binding on the regulatory agencies.

► **Commercial Bid**—In a report to Sen. John McClellan (D., Ark.), chairman of the Senate Committee on Expenditures in Executive Departments, Commerce Department said that "entrusting the general planning and programing function to the department is desirable," but protested that "the fulfillment of these functions probably would involve difficulties with the regulatory commissions so long as the granting of shipping subsidies is left in the hands of the Maritime Commission and the granting of airline subsidies is left to the Civil Aeronautics Board. . . . A more unified and coordinated program with respect to the granting of subsidies to the transportation services would result from transferring this function to the department.

"The regulatory commissions might in general follow policies which were in substantial accord with the program suggested by the (Commerce) department, but it is equally possible that they might adopt quite different and conflicting policies. As a result, the prospects of achieving a balanced promotional program are greatly diminished. . . . In fact, there might develop sharp conflicts of view between the department supporting a balanced transportation program and the individual regulatory commissions adopting policies calculated to favor the particular area of transport over which they have jurisdiction."

► **President's Plan**—When, and if, the President submits the Hoover Commission's Commerce Department reorganization plan to Congress, it will be considered by the Expenditures Committee. Unless vetoed by a constitutional majority of either house within 60 days, it would become effective.

Under the plan, Commerce would be divided into a transportation service and an industrial and commercial service. The transportation service would embrace six bureaus—for merchant marine, civil aviation, highway transportation, railroad transportation, aids to navigation and weather. The civil aviation bureau would include the present activities of the Civil Aeronautics Administration, National Advisory Committee for Aeronautics, and the promulgation of air safety regulations now carried on by CAB. Interstate Commerce Commission, Maritime Commission, and CAB would continue as independent quasi-judicial regulatory bodies.

► **NACA Problem**—Commerce Department opposed taking over NACA and requested "final authority" over air safety regulation in its report to McClellan. Under the Hoover plan, CAB would have review authority over air safety regulations promulgated by the civil aviation bureau and jurisdiction over the investigation of major aircraft accidents. The department objected to

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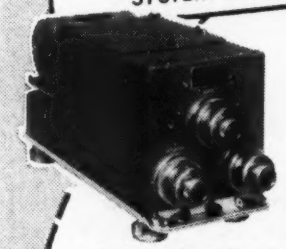
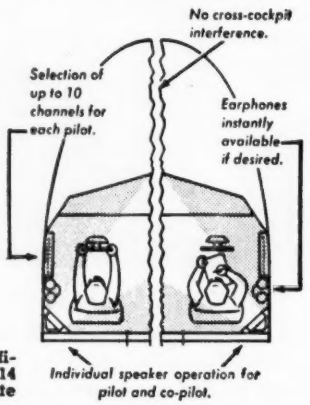


The new A.R.C. Isolation Amplifier performs two important radio control functions that have long presented problems. (1) Each pilot has **independent** selection of up to ten audio input channels in **any combination**—without cross-cockpit interference. Radio functions may be delegated so that each pilot works at peak efficiency in complex navigational and communication situations. (2) It operates individual cockpit speakers, with earphones instantly available if desired. Since the CAA no longer requires wearing of headphones when cockpit speakers are installed, the A.R.C. Isolation Amplifier relieves pilots of considerable discomfort and fatigue—particularly in hot weather and on long flights.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embracing NACA on the grounds that NACA is concentrating—and will for the forseeable future—on military developments.

The department also proposed four assistant secretaries—for transportation, international activities, domestic economy, and scientific and technical services. The Hoover Commission allowed two, the present number.

Lack of Funds Cuts CAB Use of Planes

A cut in its 1950 fiscal year appropriation has forced the Civil Aeronautics Board to ground its two transport aircraft, a DC-3 and a twin-engine Beechcraft. Seven of 15 single-engine planes used by CAB safety investigators in the field also will be withdrawn.

The two transport planes, based at Washington, are used by CAB members and staff on official missions, in accident investigations, preparing Civil Air Regulations and related safety work. The seven single-engine planes taken from service have been stationed at various cities in the Board's eight regional districts.

▶ **Employment to Decline**—By utilizing its aircraft operating funds in different offices, the Board hopes to avoid a personnel layoff. However, it is expected that average employment still will decrease during the year because CAB won't have enough money to fill vacancies as they occur.

CAB said any reduction in its staff might slow up processing of pending tariff, mail rate and safety cases, economic enforcement actions, and route proceeding.

The Board currently employs about 672 people. Last year, its operating budget was $3,637,000. This year, the President approved a $3,980,000 budget, but the figure was trimmed $359,500 by Congress.

TWA Looks Up

TWA expects 1950 to be the best year in the history of trans-Atlantic air travel.

C. S. Fullerton, general sales manager, predicts the 1950 seasonal peak will be 15 percent higher than this year's record volume. He said fall reservations are 18 to 20 percent higher than they were in 1948.

▶ **Holy Year Travel**—Much of the optimism over next year's traffic is based on expectations of heavy Holy Year traffic to Rome. Four of the 20 new Constellations TWA has on order will be placed in service by late next spring to handle additional pilgrimmage traffic.

Winter roundtrip rates only 33 per-

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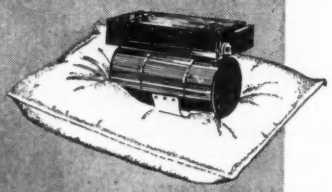

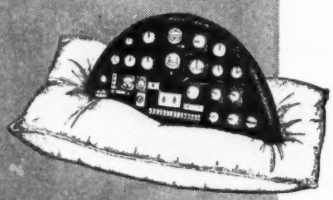

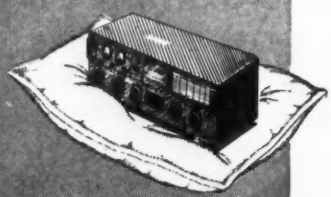

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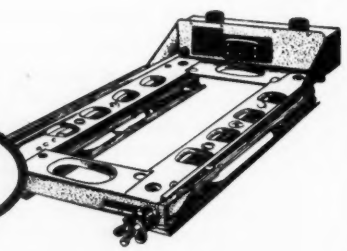

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VIBRATION CONTROL ENGINEERS

cent above the regular one-way fare will be placed in effect by trans-Atlantic carriers on Oct. 1. Designed to offset the normal winter traffic decline, the special roundtrip fares this year are also expected to encourage early Holy Year travel to Rome.

► **Tours Planned**—High interest in air tours of European shrines in conjunction with Holy Year has already been shown in the U. S., according to Fullerton. From TWA's point of view, the inclusion of French, Portuguese and Irish shrines distributes the volume of religious traffic over the company's two branches of European routes.

SHORTLINES

► **All American**—International Assn. of Machinists signed a contract with the feederline providing for raises of 5 to 30 cents an hour, seven annual paid holidays, paid vacation pro-rated to two weeks for one year or more service, paid sick leave of 10 days a year cumulative up to 60 days, regular overtime provisions and other benefits. New hourly job rates, retroactive to May 1, are: Inspector $2.03, lead mechanic $1.95, mechanic $1.86, and ground communications technician $325 monthly.

► **American**—Has been authorized to serve White Plains, N. Y., through Westchester County Airport on Routes 4, 7 and 25 under a one-year exemption from CAB.

► **Braniff**—Is completely renovating the interiors of its entire fleet of DC-3s and DC-4s, with the job to be finished by January. Objective is to standardize interiors to conform with that of the company's DC-6s.

► **Canadian Pacific Air Lines**—Recently completed a Vancouver-Hong Kong charter trip as a forerunner to regular Orient service which is slated to start on a weekly schedule shortly. . . . Grant McConachie, CPAL president, has moved his office and operational headquarters for the line to Sea Island Airport, Vancouver, from Montreal.

► **Capital**—Has signed an agreement with the International Assn. of Machinists providing for a 6 cents an hour across-the-board wage increase plus a liberalized sick leave plan for 900 mechanical employes. New wage rates, retroactive to June 1, are: lead inspector $2.12, lead mechanic and inspectors $2.06, and mechanics $1.88.

► **Challenger**—July passenger revenue hit a new high of $50,613, up 43 percent over July, 1948. Passengers handled reached a record 3792 against 2675 in July of last year. Company says vacation travel and traffic to the newly-developed oil fields of Wyoming and

Utah are largely responsible for the business increase.

▶ **Northwest**— Company's July passenger load factors on coast-to-coast air coach flights were 94 percent eastbound and 90 percent westbound, down only about 1 percent from June. NWA has asked CAB to extend the coach tariff indefinitely beyond the present Sept. 30 expiration date.

▶ **Pan American**—A CAB examiner has recommended that the carrier's certificate be amended to permit service from San Francisco and Los Angeles to Guatemala City, Guatemala, for three years. . . . Company is completing a $136,000 improvement and modernization program at Rancho Boyeros Airport terminal at Havana.

▶ **Trans Caribbean**—Has taken half-page advertisements in the New York Times stating it is "the only airline offering low-cost air coach service to every point in the U. S." Typical rates offered by Trans Caribbean from New York were: Los Angeles and San Francisco $99, Miami $45, Chicago $25, Dallas $72.50, Kansas City $57.96, New Orleans $62.21 and Seattle $127.11.

▶ **Transocean**—Has asked CAB for an exemption to make flights from Canton, China, and Hong Kong to California with U. S. citizens who want to leave the Orient because of the Communist advance. Company says it has nine full planeloads of passengers tentatively arranged for, and asserts that Pan American Airways can't handle the emergency air transportation needs.

CAB SCHEDULE

Sept. 6—Prehearing conference on application of the Spanish airline "Iberia" for a foreign air carrier permit. (Docket 4038)

Sept. 7—Hearing on service to Lake Tahoe. (Docket 3623)

Sept. 8—Prehearing conference on Bonanza Air Lines-TWA agreement on transfer of Las Vegas-Phoenix route authorizations. (Docket 4053)

Sept. 12—Hearing on CAB investigation of International Air Transport Assn.. agency resolutions. (Docket 3350)

Sept. 12—Oral argument in Milwaukee-Chicago-New York restriction case. (Docket 1789 et al)

Sept. 15—Oral argument in Pacific route amendment case. (Docket 2953 et al)

Sept. 19—Hearing in air freight tariff agreement case. (Docket 2719 et al)

Sept. 19—Hearing on service to Springfield, Mass., through Bradley Field. (Docket 3748)

Sept. 19—Hearing on applications of American and Colonial Airlines for service to Toronto. (Dockets 3853 and 4032)

Sept. 26—Hearing on Seaboard & Western and Transocean Air Lines applications for all-cargo certificates between the U. S., Europe and the Middle East. (Dockets 3041 and 3818)

Sept. 28—Hearing on disposal of Parks Air Lines' routes. (Docket 3965 et al)

Oct. 3—Hearing on Hughes Tool Co. control of TWA. (Docket 2796)

Nov. 14—Hearing in Western-Inland mail rate case. (Docket 2870)

Jan. 9—Hearing in air freight rate case. (Docket 1705 et al)

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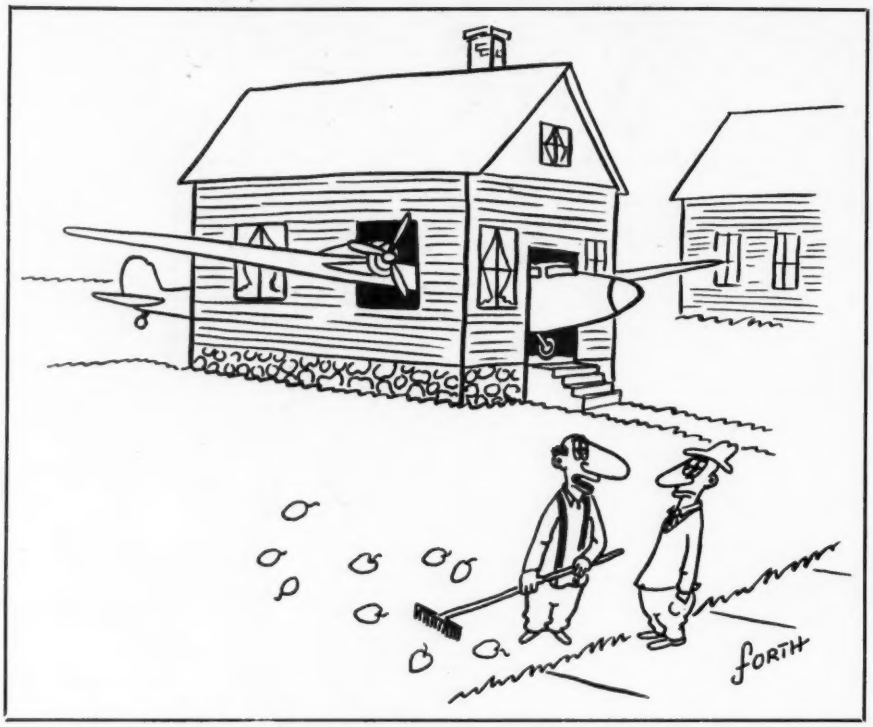

"Most kids are satisfied building MODEL airplanes"

SCHMIDT'S NICKELODEONS—This colyum seldom runs across an indignant customer but **Bob Schmidt,** manager of Tucson Municipal Airport is distinctly one. He disapproves of our publicity here July 18 for **B. M. Doolin,** manager of San Francisco Airport. Explodes he: "I am a little corked off over the play you gave a certain Irishman from San Francisco, colleague though he may be, about what you so daintily term 'lavatory receipts.' Our gross take is not as great as that of the Dean of West Coast airport managers, and Californians being what they are, I doubt that our per capita revenue will challenge the mark being established by Doolin. Admittedly, not the first to employ pay stations at airports, we do lay claim to being the first airport to brag about it as the enclosed sample will indicate."

The sample—aren't editors lucky—is a small leather pouch on a key chain, all in a wax paper envelope properly labeled: "NIK-O-LOK. Key inside. Toilet Service to the Nation, Compliments Tucson Municipal Airport, R. W. F. 'Bob' Schmidt." (Inside the leather pouch is a U. S. nickel).

* * *

HOW ABOUT WINE, WOMEN AND SONG?—**Bill Key** of AIA intercepts a recent letter by **Wright A. Parkins,** engineering manager of Pratt & Whitney, to his friend, **Adm. T. S. Combs.** Parkins was still reeling from his first reading of the new general specification for aircraft turbo-jet engines the Pentagon boys had just cooked up, figuring this spec is one to end all specs, nearly as complete as the Encyclopedia Britannica. Nothing has been overlooked; not even the environment of the engine:

"Environmental Condition—The engine shall not suffer any detrimental effects when exposed to the temperature range of minus 65 degrees Fahrenheit (minus 53.8 degrees C.) to plus 160 degrees F (plus 71.1 degrees C.). Consideration shall be given in the design of the engine for satisfactory operation during and after exposure to any combination of the following conditions in world-wide operation: humidity, fungus, sunshine, rain, snow, sleet, hail, ice-fog, fog, mildew, salt-spray, ice, ozone, smoke, wind, sand and dust."

Brother Parkins says wine, women and song were not included probably because those who wrote the spec wanted to make some concessions to the weaknesses of the engine designers. Finally, Parkins told the Admiral: "I hope you too will take time out to read it and I hope that when some poor contractor finds that he cannot do a better job than the Creator, the services will be generous in granting deviations."

—R. H. W.

WHAT'S NEW

Trade Literature

"Catalog 17," a listing of tools and prices, including suggested uses of tools and technical information, available on request to Severance Tool Industries, Inc., Saginaw, Mich.

"Heat Treatment and Pickling of Armco Stainless Steels," a 36-page booklet, available on request to Armco Steel Corp., Middletown, Ohio.

"Data File," covering shims, lock nuts and stampings, available on request to Laminated Shim Co., Inc., Glenbrook, Conn.

"Fluid Magnetic Clutches," a brochure describing the FM proportional torque controllers, available on request to Duncan & Bayley, Inc., 785 Hertel Ave., Buffalo 7, N. Y.

"Handbook and Maintenance Manual," an 86-page loose-leaf manual for operators of the Swift 125, available at no charge to Swift owners who send in their aircraft and NC serial numbers; $4 to others. Send information to Sales Mgr., Texas Engineering and Manufacturing Co., Inc., P. O. Box 6191, Dallas, Tex.

"Bulletin No. 104," a 4-page brochure dealing with microphones and stands, available on request to Electro-Voice, Inc., Buchanan, Mich.

"Subject Headings for Aeronautical Engineering Libraries," compiled by Committee of the Engineering-Aeronautics Section of the Science-Technology Group, 256 pages, price $4. Available from Special Libraries Assn., 31 East 10 St., New York 3, N. Y.

Bulletin, describing Dymo diamond compound abrasive, is available on request to Industrial Products division Elgin National Watch Co., Aurora, Ill.

"The Tale of the Cats," an 8-page bulletin on PBYs, available on request to the Babb Co., Inc., 444 Madison Ave., New York 22.

"Self Checking Chart," a 12-page booklet outlining procedures to be followed in helping reduce fire loss and hazard, available on request to The Protectoseal Co., 1920 South Western Ave., Chicago 8.

"New York University Engineering Research," a brochure aimed at companies, engineering and research organizations who are interested in projects and facilities, of the College of Engineering, available on request to Dr. Harold K. Work, Director, Research Division, New York University College of Engineering, New York 53, N. Y.

ADVERTISERS INDEX

AVIATION WEEK

SEPTEMBER 5, 1949

Aircraft Radio Corp. 38, 39
Agency—Burke Dowling Adams Adv.

Albertson & Co., Inc. 30
Agency—E. W. Sann & Associates

Beech Aircraft Corp. ..... Fourth Cover
Agency—Erwin, Wasey & Co., Inc.

B. G. Corporation, The ..... Front Cover
Agency—Albert Frank-Guenther Law, Inc.

Bridgeport Fabrics, Inc. 32
Agency—Henry A. Loudon Adv.

Cincinnati Shaper Co., The 5
Agency—The Bohnett Co.

Flight Research Engineering Corp. 38
Agency—J. Branch Briggs Adv.

Goodrich Co., The B. F. 3
Agency—Batten, Barton, Durstine & Osborn, Inc.

Jack & Heintz Precision Industries, Inc. 29
Agency—Fuller & Smith & Ross, Inc.

Johns-Manville Corp. 45
Agency—J. Walter Thompson Co.

Kollsman Instrument Corp. 39
Agency—Erwin, Wasey & Co., Inc.

Lewis Engineering Co., The 45

Lockheed Aircraft Corp. 36, 37
Agency—Foote, Cone & Belding Adv.

Moulton Co., Inc., The 9
Agency—Jaycraft Company.

National Aeronautical Corp. 8
Agency—J. Branch Briggs Adv.

National Screw & Mfg. Co., The 35
Agency—Fuller & Smith & Ross, Inc.

Phillips Petroleum Company 6
Agency—Lambert & Feasley, Inc.

Revere Corp. of America 8

Robinson Aviation, Inc. 40
Agency—J. Branch Briggs Adv.

Ryan Aeronautical Company 10
Agency—Batten, Barton, Durstine & Osborn, Inc.

Searchlight Section 41, 42, 43

Smith-Morris Company 28

Socony-Vacuum Oil Co., Inc. 19
Agency—Compton Advertising, Inc.

Sperry Gyroscope Company ..... Third Cover
Agency—Charles Dallas Reach Co., Inc.

Stewart Warner Corporation .... Second Cover
Agency—MacFarland, Aveyard & Co.

Titeflex, Incorporated 4
Agency—Sykes Advertising, Inc.

Tomkins—Johnson Company 45
Agency—Beeson-Faller-Reichert, Inc.

United States Steel Corp. 26
Agency—Batten, Barton, Durstine & Osborn, Inc.

Whittaker Co., Ltd., Wm. R. 23
Agency—The McCarty Co.

PROFESSIONAL SERVICES 41

■

SEARCHLIGHT SECTION

EMPLOYMENT
Positions Vacant 41
Positions Wanted 41
Selling Opportunities Wanted 41
EDUCATIONAL
Schools 41
BUSINESS OPPORTUNITIES
Offered 41
PLANES—EQUIPMENT
(Used or Surplus New)
For Sale 41-43
WANTED
Equipment 42

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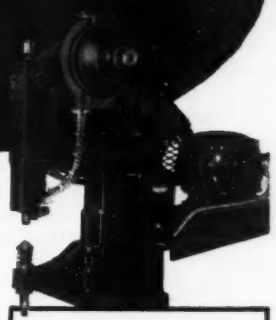

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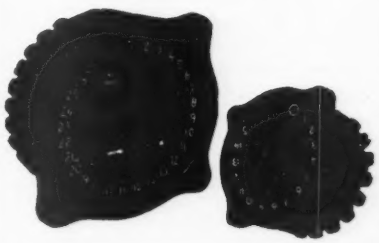

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Odlum's Statement on the B-36

(Because of the importance of the subject, we devote today's editorial page to extracts from Floyd Odlum's formal statement before the House Armed Services Committee on the B-36—R.H.W.)

During my more than 30 years of business life I have never once either asked for or received a business favor from any public official, although during that period I have had many friends and acquaintances in public office. The broad statement just made, of course, embraces a clear specific denial that I, either as an officer of Convair or otherwise, have asked for or that either Convair or myself has received any favor from Secretary of Defense Johnson, Secretary for Air Symington, or any other official in connection with procurement of the B-36 or any other procurement.

There is not one rivet of politics in the B-36; there is not one ounce of special favoritism in its more than 300 thousand pounds of loaded weight. The innuendoes and insinuations concerning the B-36 order that caused this investigation by your committee are completely baseless.

Convair is in the business of designing and building airplanes for both the Air Force and the Navy. It builds for them what they order and it strives to merit their continuing business. The Air Force has or will satisfy you on the point that the B-36 is the best plane available for the types of service to be done by it. That being the fact it is not only right that our Air Force should have an adequate quantity of the best but also altogether right that Convair, the designer of the B-36 and the producer of the original quantity, should also produce the additional 75 recently ordered.

I. Rumors which have been repeated on the floor of the House of Representatives carry with them the implications that Convair has had an unusual and unjustifiable share of the orders that have been given for aircraft by the Air Force. The contrary is the fact. Convair has fared less favorably than all the other major West Coast aircraft manufacturers in relation to increase in its backlog of orders since November 1947, which is when I became Convair's chairman. . . . The company that suffered the greatest cancelation of orders when 75 more B-26s were ordered from Convair has, even after such cancelations, the greatest backlog of orders on its books of any of the companies. Furthermore, at the same time that Convair received the recent orders for 75 more B-36s, Convair had approximately $80 million of other production orders canceled by the Air Force.

If this spells favoritism I hereby assign all Convair's rights to such treatment to its competitors.

II. The B-36 work has been anything but profitable. The entire fee earned to date by Convair on work on the B-36s, even before deduction of taxes, amounts to less than interest at the rate of 3 percent on the money that Convair has had invested in inventories specifically for the B-36 work.

Atlas Corp. has only approximately 6 percent of its assets invested in Convair. More than 35,000 people, either as Atlas Corp. or Convair stockholders, have an investment in Convair and through that investment an interest in its profits. . . . Convair has had no profits during this period and it has paid no dividends since I have been even indirectly a stockholder.

When I became chairman of Convair I found that company in default under the terms of its credit agreement with a group of banks and on the verge of financial inability to carry on. It had been necessary for the company to borrow huge sums (approximately $8 million) to carry on the B-36 work alone. To make Convair solvent and able to carry on with its operations, Atlas Corp. bought more new Convair stock, much more than doubling its stock interest in Convair this way. It also, as an emergency measure to correct Convair's acute financial situation while the new stock was in process of being issued, loaned Convair $7,000,000. This is what Atlas did for this aircraft company to make it possible to carry on economically and efficiently in building the justly famous B-36 and other outstanding aircraft. To date, Atlas has received neither interest, dividends nor capital profits with respect to its Convair investment.

III. The uninformed might infer from the rumors not only that the B-36 carries with it large profits—the opposite of which has been just stated—but also that the B-36 work is something new for Convair—something that came about after I became chairman of Convair in late 1947. This second inference, like the first, is also contrary to the facts. . . . The basic requirements for this plane were established in 1941. . . . Basic design bids were then sought by the Air Force from aircraft companies and as a result of competition by several aircraft companies Convair was awarded a contract in 1941 for two experimental B-36s; and a production order for 100 planes was awarded Convair in 1943. Extensive flight tests starting in the spring of 1948 proved the merits of the plane beyond commitments or expectations so that recently the Air Force ordered an additional quantity of 75. The fact that these planes were ordered on the basis of merit and that the alternate would have been to buy a poorer product at greater cost seems not to have been considered or mentioned by those who gave rise to the scurrilous innuendoes. . . .

IV. In addition to receiving from the B-36 the best performance for the tasks to be done by this type of plane, the people—that is to say, the taxpayers—are saved many millions of dollars by ordering 75 more of this particular plane rather than 75 of some new "just as good" model plane even if there had been a "just as good" one available, which there wasn't. Due to efficiency that develops in almost all manufacturing operations over the course of a particular job, each of the additional 75 new improved B-36s can be built for less than two-thirds the cost of each plane of the original production order, all of which savings go to the benefit of the taxpayer. . . .

V. Now, what are the facts about my contributions to the Democratic Party treasury? I contributed less than $5000 to the Democratic campaign last fall; and I have contributed about the same amount to every Democratic national presidential campaign during the past 20 years. It is not wrong to be a contributing Democrat. . . .

VI. Secretary of Defense Johnson is a friend of mine. It is my regret that I did not know him until I joined the board of directors of Convair in November 1947 where his own services as a director dated back to 1942. Since his appointment to this office I have not discussed Convair affairs with him at all and have seen him seldom.

As for my acquaintanceship with Secretary for Air Symington, with the one exception of a short social meeting several years ago, I met him for the first time in July 1948, which, incidentally was after he had publicly proclaimed the outstanding merits of the B-36. Secretary Symington has as one of his major duties the problem of keeping our aircraft industry alive and alert. It would be impossible for him to perform his duties without meeting repeatedly with executives of the various aircraft companies. I never have and never expect to ask any business favor of them or anyone else in public office, but on the other hand it is only right and fair that neither I nor Convair shall be penalized now or in the future because someone chooses to float baseless rumors and insinuations. . . .

VII. It has been said that the most important question is whether I knew when Atlas bought a stock interest in Convair that there would be a reorder of B-36s. The answer is: Definitely no. When Atlas bought an interest in Convair in 1947, no special thought was given to the B-36 except that it was a certain amount of military work on hand which would keep part of the company's facilities busy for a certain length of time. I had no thought that the B-36 might or might not be reordered until after it made successful flight tests in the spring and early summer of 1948.

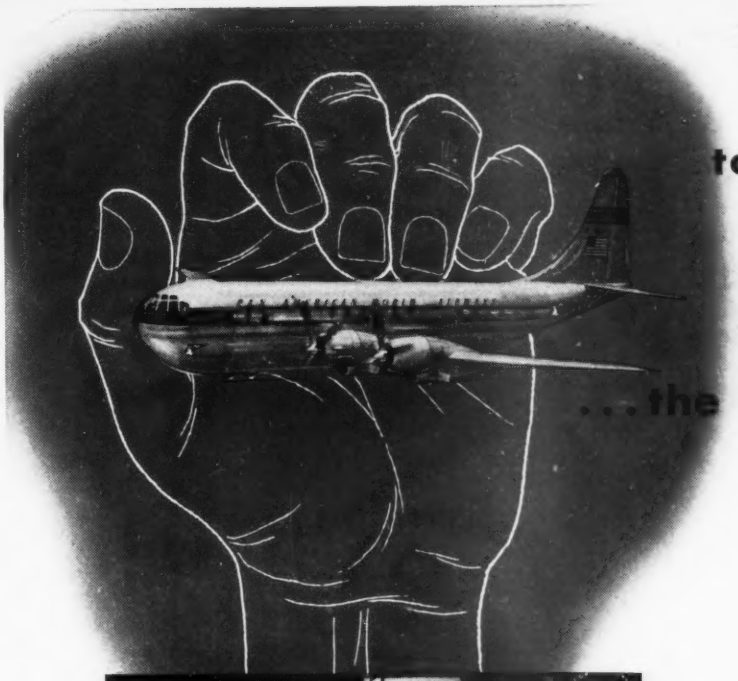
VIII. There is no truth in the rumor that I have tried to combine several aircraft companies into a "super aircraft combine."

I have never discussed with Secretary Symington directly or indirectly at any time or place his possible retirement and relationship in any way with any aircraft company or companies or any other project or company whatsoever.

IX. Convair not only has not received more than its proper share of orders but Convair has received far less than the amount of work for its San Diego plant that Convair and San Diego Area might reasonably expect in view of the reduction in size of the Naval Base there. . . .

X. What I most regret about the gossip is that such unjustified "smear" attacks on public officials make it increasingly difficult to secure able, experienced men for government offices.

Floyd B. Odlum



taking its pulse

at 20,000 feet

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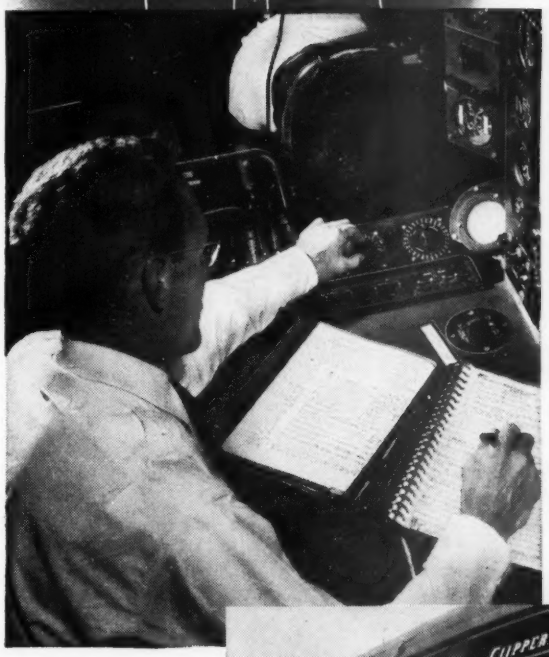

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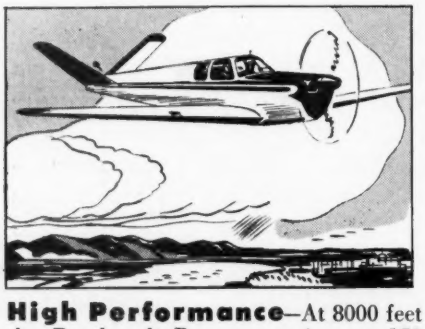

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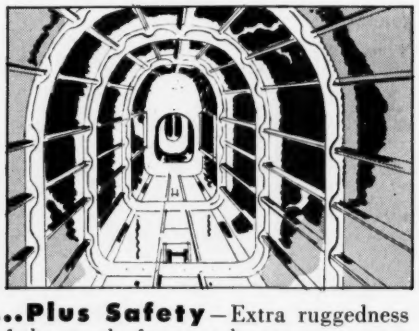

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